Hamiltonian matrix in GVB-BCCC formula derivation

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$$\begin{split} & + \frac{1}{4} \langle 0^A 0^B | \hat{g} | 0^A 0^B \rangle \langle A_0 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_0 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 0^B | \hat{g} | 0^A 0^B \rangle \langle A_0 | \hat{0}_\beta^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\alpha^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 0^B | \hat{g} | 0^A 0^B \rangle \langle A_0 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 1^B | \hat{g} | 0^A 1^B \rangle \langle A_0 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_0 | \hat{1}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 1^B | \hat{g} | 0^A 1^B \rangle \langle A_0 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_0 | \hat{1}_\beta^+ \hat{1}_\beta^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 1^B | \hat{g} | 0^A 1^B \rangle \langle A_0 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_0 | \hat{1}_\beta^+ \hat{1}_\beta^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^A 0^B | \hat{g} | 1^A 0^B \rangle \langle A_0 | \hat{1}_\alpha^+ \hat{1}_\alpha^- | A_1 \rangle \langle B_0 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^A 0^B | \hat{g} | 1^A 0^B \rangle \langle A_0 | \hat{1}_\alpha^+ \hat{1}_\alpha^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^A 1^B | \hat{g} | 1^A 0^B \rangle \langle A_0 | \hat{1}_\alpha^+ \hat{1}_\alpha^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^A 1^B | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}_\alpha^+ \hat{1}_\alpha^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^A 1^B | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}_\beta^+ \hat{1}_\beta^- | A_1 \rangle \langle B_0 | \hat{1}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 0^B | \hat{g} | 0^B 0^A \rangle \langle A_0 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\alpha^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 0^B | \hat{g} | 0^B 0^A \rangle \langle A_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\alpha^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 1^B | \hat{g} | 1^B 0^A \rangle \langle A_0 | \hat{0}_\beta^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\alpha^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 1^B | \hat{g} | 1^B 0^A \rangle \langle A_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\alpha^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 1^B | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^A 1^B | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^A 1^B | \hat{g} | 0^B 1^A \rangle \langle A_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle B_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^A 1^B | \hat{g} | 1^A 0^B \rangle \langle A$$

 $+ \tfrac{-1}{4} \langle 1^B 1^A | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_0 | \hat{1}^+_\beta \hat{1}^-_\beta | B_1 \rangle$

$$\begin{split} & + \frac{1}{4} \langle 0^B 0^A | \hat{g} | 0^B 0^A \rangle \langle A_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^B 0^A | \hat{g} | 0^B 0^A \rangle \langle A_0 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle \\ & + \frac{1}{2} \langle 0^B 0^A | \hat{g} | 0^B 0^A \rangle \langle A_0 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^B 1^A | \hat{g} | 0^B 1^A \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{4} \langle 0^B 1^A | \hat{g} | 0^B 1^A \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle \\ & + \frac{1}{2} \langle 0^B 1^A | \hat{g} | 0^B 1^A \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^B 0^A | \hat{g} | 1^B 0^A \rangle \langle A_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^B 0^A | \hat{g} | 1^B 0^A \rangle \langle A_0 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^B 1^A | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^B 1^A | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^B 1^A | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{4} \langle 1^B 1^A | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{2} \langle 1^B 1^A | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{2} \langle 1^B 1^A | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{2} \langle 1^B 1^A | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{2} \langle 1^B 1^A | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \\ & + \frac{1}{2} \langle 1^B 1^A | \hat{g} | 1^B 1^A \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^I|\hat{h}|0^I\rangle \langle I_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle \\ &+ \frac{1}{2} \sum_{I} \langle 0^I|\hat{h}|0^I\rangle \langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle \\ &+ \frac{1}{2} \sum_{I} \langle 0^I|\hat{h}|0^I\rangle \langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle \\ &+ \frac{1}{2} \sum_{I} \langle 1^I|\hat{h}|1^I\rangle \langle I_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle \\ &+ \frac{1}{2} \sum_{I} \langle 0^I0^I|\hat{g}|0^I0^I\rangle \langle I_0|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_0\rangle \\ &+ \frac{1}{2} \sum_{I} \langle 0^I0^I|\hat{g}|1^I1^I\rangle \langle I_0|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|I_0\rangle \\ &+ \frac{1}{2} \sum_{I} \langle 1^I1^I|\hat{g}|0^I0^I\rangle \langle I_0|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_0\rangle \\ &+ \frac{1}{2} \sum_{I} \langle 1^I1^I|\hat{g}|1^I1^I\rangle \langle I_0|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|I_0\rangle \\ &+ \frac{1}{2} \langle 0^A|\hat{h}|0^A\rangle \langle A_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \\ &+ \frac{1}{2} \langle 0^A|\hat{h}|0^A\rangle \langle A_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle \\ &+ \frac{1}{2} \langle 1^A|\hat{h}|1^A\rangle \langle A_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle \\ &+ \frac{1}{2} \langle 0^A0^A|\hat{g}|0^A0^A\rangle \langle A_1|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_1\rangle \\ &+ \frac{1}{2} \langle 0^A0^A|\hat{g}|1^A1^A\rangle \langle A_1|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_1\rangle \\ &+ \frac{1}{2} \langle 0^A0^A|\hat{g}|1^A1^A\rangle \langle A_1|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_1\rangle \end{split}$$

$$\begin{split} &+\frac{1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{A}0^{A}\rangle\langle A_{1}|\hat{1}_{n}^{+}\hat{1}_{p}^{+}\hat{0}_{p}^{-}\hat{0}_{n}^{-}|A_{1}\rangle \\ &+\frac{1}{2}\langle 1^{A}1^{A}|\hat{g}|1^{A}1^{A}\rangle\langle A_{1}|\hat{1}_{n}^{+}\hat{1}_{p}^{+}\hat{1}_{p}^{-}\hat{1}_{n}^{-}|A_{1}\rangle \\ &+\frac{1}{2}\langle 0^{B}|\hat{h}|0^{B}\rangle\langle B_{1}|\hat{0}_{n}^{+}\hat{0}_{n}^{-}|B_{1}\rangle \\ &+\frac{1}{2}\langle 0^{B}|\hat{h}|0^{B}\rangle\langle B_{1}|\hat{0}_{p}^{+}\hat{0}_{p}^{-}|B_{1}\rangle \\ &+\frac{1}{2}\langle 0^{B}|\hat{h}|0^{B}\rangle\langle B_{1}|\hat{0}_{p}^{+}\hat{0}_{p}^{-}|B_{1}\rangle \\ &+\frac{1}{2}\langle 1^{B}|\hat{h}|1^{B}\rangle\langle B_{1}|\hat{1}_{p}^{+}\hat{1}_{n}^{-}|B_{1}\rangle \\ &+\frac{1}{2}\langle 1^{B}|\hat{h}|1^{B}\rangle\langle B_{1}|\hat{1}_{p}^{+}\hat{1}_{p}^{-}|B_{1}\rangle \\ &+\frac{1}{2}\langle 0^{B}0^{B}|\hat{g}|0^{B}0^{B}\rangle\langle B_{1}|\hat{0}_{n}^{+}\hat{0}_{p}^{+}\hat{0}_{p}^{-}\hat{0}_{n}^{-}|B_{1}\rangle \\ &+\frac{1}{2}\langle 0^{B}0^{B}|\hat{g}|1^{B}1^{B}\rangle\langle B_{1}|\hat{0}_{n}^{+}\hat{0}_{p}^{+}\hat{1}_{p}^{-}\hat{1}_{n}^{-}|B_{1}\rangle \\ &+\frac{1}{2}\langle 1^{B}1^{B}|\hat{g}|0^{B}0^{B}\rangle\langle B_{1}|\hat{1}_{n}^{+}\hat{1}_{p}^{+}\hat{0}_{p}^{-}\hat{0}_{n}^{-}|B_{1}\rangle \\ &+\frac{1}{2}\langle 1^{B}1^{B}|\hat{g}|0^{B}0^{B}\rangle\langle B_{1}|\hat{1}_{n}^{+}\hat{1}_{p}^{+}\hat{1}_{p}^{-}\hat{0}_{n}^{-}|B_{1}\rangle \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{0}|\hat{0}_{n}^{+}\hat{0}_{n}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{p}^{+}\hat{0}_{n}^{-}|J_{0}\rangle \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{0}|\hat{0}_{n}^{+}\hat{0}_{n}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{p}^{+}\hat{0}_{p}^{-}|J_{0}\rangle \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{0}|\hat{0}_{p}^{+}\hat{0}_{n}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{p}^{+}\hat{0}_{n}^{-}|J_{0}\rangle \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{0}|\hat{0}_{p}^{+}\hat{0}_{n}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{p}^{+}\hat{0}_{n}^{-}|J_{0}\rangle \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{0}|\hat{0}_{p}^{+}\hat{0}_{n}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{p}^{+}\hat{0}_{n}^{-}|J_{0}\rangle \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{0}|\hat{0}_{p}^{+}\hat{0}_{n}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{p}^{+}\hat{0}_{p}^{-}|J_{0}\rangle \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{0}|\hat{1}_{p}^{+}\hat{1}_{n}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{p}^{+}\hat{0}_{p}^{-}|J_{0}\rangle \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{0}|\hat{1}_{p}^{+}\hat{1}_{n}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{p}^{+}\hat{0}_{p}^{-}|J_{0}\rangle \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}$$

$$\begin{split} &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 0^{J}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle 1_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}|J_{0}\rangle\\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 0^{J}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 0^{J}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 0^{J}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 0^{J}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 0^{J}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 1^{J}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 1^{J}1^{I}|\hat{g}|1^{I}1^{J}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 1^{J}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{J}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{J}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{J}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{J}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{J}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{J}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{J}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{J}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{I}0^{A}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{I}0^{A}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{I}0^{A}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{I}0^{A}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{I}1^{A}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{I}1^{A}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{I}1^{A}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 0^{I}0^{A}|\hat{g}|0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 0^{I}0^{A}|\hat{g}|0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 0^{I}1^{A}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 0^{I}1^{A}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 0^{I}1^{A}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 0^{I}0^{A}|\hat{g}|0^{A}0^{A}|\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\langle 1^{I}1^{A}|\hat{g}|1^{I}1^{A}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{I}1^{A}|\hat{g}|1^{I}1^{A}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\\ &+\frac{1}{2}\sum_{I}\langle 1^{I}1^{A}|\hat{g}|1^{I}1^{A}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{I}0^{B}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{I}0^{B}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{I}0^{B}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\langle 1^{I}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{-1}{4}\sum_{I}\langle 1^{I}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{I}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{I}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{I}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{I}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{I}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 0^{I}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{I}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{I}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{I}1^{B}|\hat{g}|1^{I}0^{B}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{I}1^{B}|\hat{g}|1^{I}0^{B}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{I}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{I}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{I}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\\ &+\frac{1}{4}\sum_{I}\langle 1^{I}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\\ &+\frac{1}{4}\langle 0^{A}0^{B}|\hat{g}|0^{A}0^{B}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A$$

$$\begin{split} &+\frac{-1}{4}\langle 0^{A}1^{B}|\hat{g}|1^{B}0^{A}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 1^{A}0^{B}|\hat{g}|0^{B}1^{A}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 1^{A}0^{B}|\hat{g}|0^{B}1^{A}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 1^{A}1^{B}|\hat{g}|1^{B}1^{A}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 1^{A}1^{B}|\hat{g}|1^{B}1^{A}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 0^{B}0^{A}|\hat{g}|0^{A}0^{B}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 0^{B}0^{A}|\hat{g}|0^{A}0^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 0^{B}1^{A}|\hat{g}|1^{A}0^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 0^{B}1^{A}|\hat{g}|1^{A}0^{B}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 1^{B}0^{A}|\hat{g}|0^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 1^{B}0^{A}|\hat{g}|0^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle} \\ &+\frac{-1}{4}\langle 1^{B}0^{A}|\hat{g}|0^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle} \\ &+\frac{1}{4}\langle 0^{B}0^{A}|\hat{g}|0^{B}0^{A}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle} \\ &+\frac{1}{4}\langle 0^{B}0^{A}|\hat{g}|0^{B}0^{A}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|$$

$$\begin{split} &\langle (A_1, B_1) | \hat{H} | (A_1, B_1, I_1) \rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^I | \hat{h} | 0^I \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1} t_{B_1, I_1} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{I}|\hat{h}|0^{I}\rangle\langle I_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{I}|\hat{h}|1^{I}\rangle\langle I_{I}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle I_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{g}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{g}_{\beta}^{-}\hat{g}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{g}_{\beta}^{-}\hat{g}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle I_{I}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{g}_{\beta}^{-}\hat{g}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle I_{I}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{g}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}\hat{g}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}\hat{g}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{J}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{J}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{J}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|I^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{J}|\hat{g}|0^{A}0^{J}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{J}|\hat{g}|0^{A}0^{J}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{J}|\hat{g}|0^{A}0^{J}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{J}|\hat{g}|0^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{J}|\hat{g}|0^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{J}|\hat{g}|0^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{J}|\hat{g}|1^{A}0^{J}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{J}|\hat{g}|1^{A}1^{J}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{J}|\hat{g}|1^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{J}|1^{J}\rangle\langle A_{1}|\hat{0$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{o}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}0^{I}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{I}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|0$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}I^{I}\rangle\langle A_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{I}\rangle\langle I_{I}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}I^{I}\rangle\langle A_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{I}\rangle\langle I_{I}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}I^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{I}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{I}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{I}I^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{I}\rangle\langle I_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{I}|\hat{0}_{\alpha}^{+}\hat{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{g}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{g}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{g}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{g}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{g}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{g}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{1}|\hat{G}_{\beta}^{+}\hat{g}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{1}|\hat{G}_{\beta}^{+}\hat{g}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{G}_{\beta}^{+}\hat{g}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{G}_{\beta}^{+}\hat{g}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}|\hat{h}|0^{I}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}|\hat{h}|0^{I}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{I}|\hat{h}|1^{I}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\beta}^{-}\hat{G}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\beta}^{-}\hat{G}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\beta}^{-}\hat{G}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{1}|\hat{G}_{\alpha}^{+}\hat{G}_{\beta}^{-}\hat{G}_{\alpha}^{-}|I_{0}\rangle\langle I_{0}|\hat{G}_{\alpha}^{+}\hat{G}_{\alpha}^{-}|I_{0}\rangle\langle I_{1}^{+}\hat{I}_{A}^{-}|I_{1}^{-}|I_{1}^{+}I_{1}\rangle\langle I_{1}^{-}I_{1}^{+}I_{1}^{-}|I_{1}^{+}I_{1}^{-}I_{1}\rangle\langle I_{1}^{-}I_{1}^{+}I_{1}^{-}I_{1}\rangle\langle I_{1}^{-}I_{1}^{+}I_{1}^{-}I_{1}\rangle\langle I_{1}^{-$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\sum_{J}\left\langle 1^{I}1^{I}[\hat{g}]0^{J}0^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\lambda_{1}t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\left\langle 1^{I}1^{I}[\hat{g}]0^{J}0^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{1}t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}0^{I}[\hat{g}]1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{1}t_{1}t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}0^{I}[\hat{g}]1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{1}t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\left\langle 1^{I}1^{I}[\hat{g}]1^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{1}t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}0^{J}[\hat{g}]0^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{1}t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}0^{J}[\hat{g}]0^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}0^{J}[\hat{g}]0^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{1}{2}\sum_{I}\sum_{J}\left\langle 1^{I}0^{J}[\hat{g}]0^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}0^{I}[\hat{g}]0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}0^{I}[\hat{g}]0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}0^{I}[\hat{g}]0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}0^{I}[\hat{g}]0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{1}t_{1}t_{1}t_{1}\right. \\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}1^{I}[\hat{g}]0^{A}1^{$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{\hat{+}}\hat{1}_{\beta}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{\hat{+}}\hat{1}_{\beta}^{\hat{-}}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{\hat{+}}\hat{0}_{\beta}^{\hat{-}}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\alpha}^{\hat{-}}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{\hat{+}}\hat{0}_{\beta}^{\hat{-}}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\alpha}^{\hat{-}}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{\hat{+}}\hat{0}_{\beta}^{\hat{-}}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{\hat{+}}\hat{1}_{\alpha}^{\hat{-}}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{\hat{+}}\hat{0}_{\beta}^{\hat{-}}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\alpha}^{\hat{-}}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\alpha}^{\hat{-}}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\alpha}^{\hat{-}}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\alpha}^{\hat{-}}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\alpha}^{\hat{-}}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\alpha}^{\hat{-}}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\beta}^{\hat{-}}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\alpha}^{\hat{-}}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\beta}^{\hat{-}}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{\hat{+}}\hat{0}_{\alpha}^{\hat{-}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^I|\hat{h}|I^I\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{\alpha}|I_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^I|\hat{h}|I^I\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{\alpha}|I_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^I|\hat{h}|I^I\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{\alpha}|I_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^I|\hat{h}|I^I\rangle\langle I_2|\hat{1}_{r}^{+}\hat{0}_{\alpha}|I_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^I|\hat{h}|I^I\rangle\langle I_2|\hat{1}_{r}^{+}\hat{0}_{\beta}|I_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^I0^I|\hat{g}|0^II^I\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{r}^{+}\hat{g}_{\beta}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^I0^I|\hat{g}|0^II^I\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{r}^{+}\hat{g}_{\beta}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^I0^I|\hat{g}|0^II^I\rangle\langle I_2|\hat{1}_{r}^{+}\hat{0}_{r}^{+}\hat{g}_{\beta}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^I0^I|\hat{g}|1^I0^I\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{r}^{-}\hat{g}_{\beta}^{-}\hat{g}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^I0^I|\hat{g}|1^I0^J\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{r}^{-}\hat{g}_{\beta}^{-}|I_0\rangle\langle J_0|\hat{0}_{r}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^I0^J|\hat{g}|1^I0^J\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{r}^{-}\hat{g}_{\beta}^{-}|I_0\rangle\langle J_0|\hat{0}_{r}^{+}\hat{0}_{r}^{-}|J_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^I0^J|\hat{g}|1^I1^J\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{r}^{-}\hat{g}_{\beta}^{-}|I_0\rangle\langle J_0|\hat{0}_{r}^{+}\hat{0}_{r}^{-}|J_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{r}^{-}|I_0\rangle\langle J_0|\hat{0}_{r}^{+}\hat{0}_{r}^{-}|J_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_2|\hat{0}_{r}^{+}\hat{1}_{r}^{-}|I_0\rangle\langle J_0|\hat{0}_{r}^{+}\hat{0}_{r}^{-}|J_0\rangle t_{A_1}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}I^{I}[\hat{g}|1^{J}I^{J}]\right\rangle\langle I_{2}|\hat{1}_{\alpha}^{2}\hat{\alpha}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}I^{I}[\hat{g}|1^{J}I^{J}]\right\rangle\langle I_{2}|\hat{1}_{\beta}^{2}\hat{\alpha}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}I^{J}[\hat{g}|1^{I}I^{J}]\right\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}I^{J}[\hat{g}|1^{I}I^{J}]\right\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}I^{J}[\hat{g}|1^{I}I^{J}]\right\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\left\langle 0^{I}I^{J}[\hat{g}|1^{I}I^{J}]\right\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}0^{I}[\hat{g}|0^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}0^{I}[\hat{g}|0^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}0^{I}[\hat{g}|0^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}0^{I}[\hat{g}|0^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}0^{I}[\hat{g}|0^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\left\langle 0^{A}0^{I}[\hat{g}|1^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\left\langle 1^{A}0^{I}[\hat{g}|1^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}\\ &+\frac{1}{2}\sum_{I}\left\langle 1^{A}0^{I}[\hat{g}|1^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{I}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|A_{I}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{\alpha}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{\alpha}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}I^{I}\rangle\langle I_{2}|\hat{0}_{\alpha}^{-}\hat{1}_{\beta}^{+}\hat{0}_{\beta}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}I^{I}|\hat{g}|1^{I}I^{I}\rangle\langle I_{2}|\hat{0}_{\alpha}^{-}\hat{1}_{\beta}^{+}\hat{1}_{\beta}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}I^{I}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}1^{I}|\hat{g}|1^{I}I^{I}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{\alpha}|t_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{1},B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}I^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}I^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}I^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}I^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}|\hat{h}|1^{I}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{\dagger}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{2} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}|\hat{h}|1^{I}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{\dagger}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{1}\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{1}\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{1}\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{1}\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|I_{$$

$$\begin{split} & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{J} | \hat{g} | I^{I} I^{J} \rangle \langle I_{2} | \hat{1}^{2}_{\beta} \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{0} | \hat{1}^{2}_{\beta} \hat{1}^{-}_{\beta} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{J} | \hat{g} | I^{I} I^{J} \rangle \langle I_{2} | \hat{1}^{2}_{\beta} \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{0} | \hat{1}^{2}_{\alpha} \hat{1}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{2} | \hat{0}^{2}_{\alpha} \hat{1}^{-}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{2} | \hat{1}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{2} | \hat{1}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{J} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\beta} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum_{I} \langle 0^{I} I^{J} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{0}^{2}_{\alpha} \hat{0}^{-}_{\beta} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} \\ & + \frac{1}{2} \sum$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}I^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}I^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}I^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}I^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}I^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}I^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}I^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle A_{1}t_{B_{1$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^I|\hat{h}|I^I\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{I}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^I|\hat{h}|I^I\rangle\langle I_3|\hat{0}^+_{\beta}\hat{I}^-_{\beta}|I_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^I|\hat{h}|I^I\rangle\langle I_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^I|\hat{h}|I^I\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^I0^I|\hat{g}|0^II^I\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^+_{\beta}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^I0^I|\hat{g}|0^II^I\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^+_{\beta}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^I0^I|\hat{g}|0^II^I\rangle\langle I_3|\hat{1}^+_{\alpha}\hat{0}^+_{\beta}\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^I0^I|\hat{g}|0^II^I\rangle\langle I_3|\hat{1}^+_{\alpha}\hat{0}^+_{\beta}\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 0^I0^I|\hat{g}|1^I0^J\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^+_{\alpha}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 0^I0^J|\hat{g}|1^I0^J\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^+_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^+_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^+_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^+_{\beta}|I_0\rangle\langle J_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^+_{\beta}|I_0\rangle\langle J_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^+_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_1,I_3} \\ &+\frac{1$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{I}I^{I}[\hat{g}]0^{J}O^{J}\langle I_{3}|\hat{1}_{\alpha}^{2}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{2}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{I}I^{I}[\hat{g}]0^{J}O^{J}\langle I_{3}|\hat{1}_{\beta}^{2}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{2}\hat{0}_{\alpha}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{I}I^{I}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{2}\hat{1}_{\alpha}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{I}I^{I}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{2}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{2}\hat{1}_{\alpha}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{I}I^{I}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{2}\hat{0}_{\alpha}^{2}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{2}\hat{1}_{\alpha}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{I}I^{J}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{2}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{2}\hat{1}_{\alpha}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}I^{J}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{2}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}I^{J}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{2}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}I^{J}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{2}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}I^{J}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{0}_{\alpha}^{2}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}I^{J}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{0}_{\alpha}^{2}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}I^{J}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{0}_{\alpha}^{2}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{2}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}I^{J}[\hat{g}]1^{A}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{0}_{\alpha}^{2}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{2}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}I^{J}[\hat{g}]0^{A}I^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{2}\hat{0}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle (^{A}1^{A}|\hat{a}|0^{I}1^{I})\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle (^{A}0^{I}|\hat{a}|0^{A}1^{I})\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle (^{A}0^{I}|\hat{a}|1^{A}1^{I})\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle (^{A}0^{I}|\hat{a}|0^{A}1^{I})\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle (^{A}0^{I}|\hat{a})|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle (^{B}0^{I}|\hat{a})|0^{B}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle (^{B}0^{I}|\hat{a})|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle (^{B}0^{I}|\hat{a})|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle (^{B}0^{I}|\hat{a})|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle (^{B}0^{I}|\hat{a})|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{I}|\hat{h}|1^{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}|\hat{h}|1^{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}|\hat{h}|1^{I}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}\hat{h}|1^{I}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}1^{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}1^{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}1^{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|0^{I}1^{I}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}$$

$$\begin{split} & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} I^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{1}_{\beta}^{+} \hat{I}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \langle 0^{A} 0^{J} | \hat{g} | 0^{A} I^{J} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \langle 0^{A} 0^{J} | \hat{g} | 0^{A} I^{J} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \langle 0^{A} 0^{J} | \hat{g} | 0^{A} I^{J} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \langle 0^{A} 0^{J} | \hat{g} | 0^{A} I^{J} \rangle \langle A_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \langle 0^{A} 0^{J} | \hat{g} | 0^{A} I^{J} \rangle \langle A_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \langle 0^{A} 0^{J} | \hat{g} | 0^{A} I^{J} \rangle \langle A_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \langle 0^{A} 0^{J} | \hat{g} | 1^{A} 1^{J} \rangle \langle A_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \langle 1^{A} 0^{J} | \hat{g} | 1^{A} 1^{J} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} \\ & + \frac{1}{2} \sum_{I} \langle 1^{A} 0^{J} | \hat{g} | 1^{A} 1^{J} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{3} | \hat{0}_{\beta}^{+}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{I}1^{I}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}\hat{1}_{\alpha}^{\dagger}|_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{\dagger}\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{\dagger}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}|I_$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{\sigma}_{\beta}|A_{I}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{I}|\hat{0}_{\alpha}^{+}\hat{\sigma}_{\alpha}|A_{I}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{I}|\hat{1}_{\alpha}^{+}\hat{\tau}_{\alpha}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{\tau}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{I}|\hat{1}_{\beta}^{+}\hat{\tau}_{\beta}|A_{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{\tau}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{I}|\hat{1}_{\alpha}^{+}\hat{\tau}_{\alpha}|A_{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{\tau}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{I}|\hat{1}_{\alpha}^{+}\hat{\tau}_{\alpha}^{-}|A_{I}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{I}|\hat{1}_{\alpha}^{+}\hat{\tau}_{\alpha}^{-}|A_{I}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{I}|\hat{1}_{\alpha}^{+}\hat{\tau}_{\alpha}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{I}|\hat{1}_{\alpha}^{+}\hat{\tau}_{\alpha}^{-}|A_{I}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{I}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{I}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{I}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{I}}t_{A_{I},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|1^{I}0^{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{I}\rangle\langle I_{3}|\hat{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{\perp}\hat{1}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{\perp}\hat{1}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{\perp}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{\perp}\hat{0}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\beta}|J_{0}\rangle t_{A$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{I}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{I}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{I}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{I}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{I}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{I}\rangle\langle I_{3}|$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{1}|\hat{g}|1^{I}\rangle\langle B_{1}|\hat{g}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,)\rangle = \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|0^A\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle t_{B_1} \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|0^A\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle t_{B_1} \\ &+ \frac{1}{2}\langle 1^A|\hat{h}|1^A\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle t_{B_1} \\ &+ \frac{1}{2}\langle 1^A|\hat{h}|1^A\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle t_{B_1} \\ &+ \frac{1}{2}\langle 1^A|\hat{h}|1^A\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle t_{B_1} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|0^A0^A\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_1\rangle t_{B_1} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|1^A1^A\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_1\rangle t_{B_1} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|1^A1^A\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_1\rangle t_{B_1} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|1^A1^A\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_1\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 0^A0^A|\hat{g}|1^A1^A\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_1\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 0^A0^A|\hat{g}|0^A0^A\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 0^A0^A|\hat{g}|0^A0^A\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 0^A1^A|\hat{g}|0^A1^A\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 0^A1^A|\hat{g}|0^A1^A\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 1^A0^A|\hat{g}|1^A0^A\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 1^A0^A|\hat{g}|1^A0^A\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 1^A0^A|\hat{g}|1^A0^A\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 1^A0^A|\hat{g}|1^A0^A\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 1^A0^A|\hat{g}|1^A0^A\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1} \\ &+ \frac{1}{2}\sum\langle 1^A1^A|\hat{g}|1^A1^A\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\alpha}^{-}|A_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}^{-}|A_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{A}1^{A}\rangle\langle A_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}^{-}|A_{0}\rangle t_{B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|$$

$$\begin{split} & + \frac{-1}{2} \langle 0^{A} 0^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{-1}{2} \langle 1^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle B_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{-1}{2} \langle 1^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{-1}{2} \langle 1^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{-1}{2} \langle 1^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{1}{2} \langle 0^{A} 0^{B} | \hat{g} | 0^{A} 0^{B} \rangle \langle A_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{1}{2} \langle 1^{A} 0^{B} | \hat{g} | 1^{A} 0^{B} \rangle \langle A_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 0^{A} 1^{B} \rangle \langle A_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{1}{2} \langle 1^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{1}{2} \langle 1^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{1}{2} \langle 1^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{1}{2} \langle 1^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{1}{2} \langle 1^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{B_{1}} \\ & + \frac{1}{2} \langle 1^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1)\rangle = \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^A\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^A\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^A\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^A\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^A\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|0^A1^A\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_1\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|1^A1^A\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_1\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|0^A1^A\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_1\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|1^A1^A\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_1\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\sum\langle 0^A1^A|\hat{g}|1^A0^A\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\sum\langle 0^A0^I|\hat{g}|1^A0^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\sum\langle 0^A1^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\sum\langle 0^A1^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\sum\langle 0^A1^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\sum\langle 0^A0^I|\hat{g}|1^A0^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\sum\langle 0^A0^I|\hat{g}|1^A0^I\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2,B_1} \\ &+ \frac{1}{2}\sum\langle 0^A0^I|\hat{g}|1^A0^I\rangle\langle A_2|\hat{0}_{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{A}1^{A}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|$$

$$\begin{split} &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}0^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}0^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{B}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}|\hat{h}|1^{A}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle t_{A_{2}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^{A}|\hat{h}|1^{A}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle t_{A_{2}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{A}1^{A}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{2}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{A}1^{A}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{2}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{A}1^{A}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{2}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}\\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{2}$$

$$\begin{split} & + \frac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 0^B \rangle \langle A_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_1} \\ & + \frac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 0^B \rangle \langle A_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{A_2} t_{B_1} \\ & + \frac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 1^B \rangle \langle A_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_1} \\ & + \frac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 1^B \rangle \langle A_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{A_2} t_{B_1} \\ & + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 0^B \rangle \langle A_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_1} \\ & + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 0^B \rangle \langle A_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_1} \\ & + \frac{1}{2} \langle 0^A 1^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_1} \\ & + \frac{1}{2} \langle 0^A 1^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_1} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1)\rangle = \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^A\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^A\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^A\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^A\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^A\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|0^A1^A\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_1\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|1^A1^A\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_1\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|0^A1^A\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_1\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|1^A1^A\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_1\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A0^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A0^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_3,B_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A0^I\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_3,B_1} \\ &+ \frac$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{I}1^{I}1^{I}\rangle\langle A_{3}|\hat{$$

$$\begin{split} &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{3},B_{1}} \\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}0^{B}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{1}} \\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}0^{B}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{3},B_{1}} \\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{B}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{1}} \\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{B}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{1}} \\ &+\frac{1}{2}\langle 0^{A}|\hat{h}|1^{A}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle t_{A_{3}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^{A}|\hat{h}|1^{A}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle t_{A_{3}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{A}1^{A}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{\beta}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{3}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{A}1^{A}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{\beta}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{3}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{A}1^{A}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{\beta}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{3}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{A}|\hat{g}|1^{A}0^{A}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_{1}\rangle t_{A_{3}} t_{B_{1}} \\ &+\frac{1}{2}\langle 0^{A}0^{A}|\hat{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}\\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t$$

$$\begin{split} & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle t_{A_{3}} t_{B_{1}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} t_{B_{1}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle t_{A_{3}} t_{B_{1}} \\ & + \frac{1}{2} \langle 0^{A} 0^{B} | \hat{g} | 1^{A} 0^{B} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} t_{B_{1}} \\ & + \frac{1}{2} \langle 0^{A} 0^{B} | \hat{g} | 1^{A} 0^{B} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} t_{B_{1}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} t_{B_{1}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} t_{B_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,)\rangle = \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|0^B\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_1} \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|0^B\rangle\langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_1} \\ &+ \frac{1}{2}\langle 1^B|\hat{h}|1^B\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_1} \\ &+ \frac{1}{2}\langle 1^B|\hat{h}|1^B\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_1} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|0^B0^B\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_1} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|1^B1^B\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_1} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|1^B1^B\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_1} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|1^B1^B\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_1} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|1^B1^B\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|0^B0^I\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|0^B0^I\rangle\langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|0^B0^I\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B1^I|\hat{g}|0^B1^I\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B1^I|\hat{g}|0^B1^I\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 1^B0^I|\hat{g}|1^B0^I\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 1^B0^I|\hat{g}|1^B0^I\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 1^B0^I|\hat{g}|1^B0^I\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 1^B0^I|\hat{g}|1^B1^I\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 1^B1^I|\hat{g}|1^B1^I\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_1} \\ &+ \frac{1}{2}\sum_{I}\langle 1^B1^I|\hat{g}|1^B1^I\rangle\langle B_0|\hat{1}_{\alpha}^{+$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{\perp}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\beta}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\beta}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\beta}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{\perp}\hat{1}_{\beta}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\beta}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|1^{B}1^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{\perp}\hat{0}_{\beta}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}$$

$$\begin{split} & + \frac{-1}{2} \langle 1^A 1^A | \hat{g} | 0^B 0^B \rangle \langle A_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_1} \\ & + \frac{-1}{2} \langle 1^A 1^A | \hat{g} | 0^B 0^B \rangle \langle A_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{A_1} \\ & + \frac{-1}{2} \langle 1^A 1^A | \hat{g} | 1^B 1^B \rangle \langle A_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_1} \\ & + \frac{-1}{2} \langle 1^A 1^A | \hat{g} | 1^B 1^B \rangle \langle A_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{A_1} \\ & + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 0^A 0^B \rangle \langle A_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_1} \\ & + \frac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 0^B \rangle \langle A_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_1} \\ & + \frac{1}{2} \langle 0^A 1^B | \hat{g} | 0^A 1^B \rangle \langle A_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_1} \\ & + \frac{1}{2} \langle 1^A 1^B | \hat{g} | 1^A 1^B \rangle \langle A_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_1} \\ & + \frac{1}{2} \langle 1^A 1^B | \hat{g} | 1^A 1^B \rangle \langle A_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_1} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2)\rangle = \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|1^B\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|1^B\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|1^B\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|1^B\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|1^B\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|0^B1^B\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|1^B1^B\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|0^B1^B\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|1^B1^B\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|1^B1^B\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B0^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B0^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B1^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B1^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^B1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B0^I\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1,B_2} \\ &+ \frac{1}{2}\sum_{I}\langle$$

$$\begin{split} & + \frac{1}{2} \sum_{I} \langle 0^B 1^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{1}_{\beta}^+ \hat{0}_{\alpha}^- | B_1 \rangle \langle I_0 | \hat{1}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \langle I_0 | \hat{1}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1,B_2} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t$$

$$\begin{split} &+\frac{1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{-1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{-1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{-1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{-1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{-1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|0^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|0^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{2}} \\ &+\frac{1}{2}\langle 0^{B}|\hat{h}|1^{B}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{1}} t_{B_{2}} \\ &+\frac{1}{2}\langle 0^{B}|\hat{h}|1^{B}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{1}} t_{B_{2}} \\ &+\frac{1}{2}\langle 0^{B}0^{B}|\hat{g}|0^{B}1^{B}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{b}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{1}} t_{B_{2}} \\ &+\frac{1}{2}\langle 0^{B}0^{B}|\hat{g}|0^{B}1^{B}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{b}_{\beta}^{-}\hat{b}_{\alpha}^{-}|B_{1}\rangle t_{A_{1}} t_{B_{2}} \\ &+\frac{1}{2}\langle 0^{B}0^{B}|\hat{g}|1^{B}0^{B}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}\hat{b}_{\beta}^{-}\hat{b}_{\alpha}^{-}|B_{1}\rangle t_{A_{1}} t_{B_{2}} \\ &+\frac{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{0}^{\perp}_{\alpha} \hat{1}_{\alpha} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{0}^{\perp}_{\beta} \hat{1}^{\perp}_{\beta} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\beta} \hat{0}^{\perp}_{\beta} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_2 | \hat{0}^{\perp}_{\alpha} \hat{1}^{\perp}_{\alpha} | B_1 \rangle \langle I_0 | \hat{1}^{\perp}_{\alpha} \hat{1}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_2 | \hat{0}^{\perp}_{\beta} \hat{1}^{\perp}_{\beta} | B_1 \rangle \langle I_0 | \hat{1}^{\perp}_{\beta} \hat{1}^{\perp}_{\beta} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{1}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{1}^{\perp}_{\beta} \hat{0}^{\perp}_{\alpha} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{1}^{\perp}_{\beta} \hat{0}^{\perp}_{\alpha} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_2 | \hat{1}^{\perp}_{\beta} \hat{0}^{\perp}_{\alpha} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_2 | \hat{0}^{\perp}_{\beta} \hat{1}^{\perp}_{\beta} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{0}^{\perp}_{\beta} \hat{1}^{\perp}_{\beta} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}^{\perp}_{\beta} \hat{1}^{\perp}_{\beta} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}^{\perp}_{\beta} \hat{1}^{\perp}_{\beta} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}^{\perp}_{\beta} \hat{1}^{\perp}_{\beta} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}^{\perp}_{\beta} \hat{0}^{\perp}_{\beta} | B_1 \rangle \langle I_0 | \hat{0}^{\perp}_{\alpha} \hat{0}^{\perp}_{\alpha} | I_0 \rangle t_{A_1} t_{B_2} \\ &+\frac{1}{2}\langle 0^A 0$$

$$\begin{split} & + \frac{-1}{2} \langle 1^{A} 1^{A} | \hat{g} | 0^{B} 1^{B} \rangle \langle A_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle t_{A_{1}} t_{B_{2}} \\ & + \frac{-1}{2} \langle 1^{A} 1^{A} | \hat{g} | 0^{B} 1^{B} \rangle \langle A_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle B_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{1}} t_{B_{2}} \\ & + \frac{-1}{2} \langle 1^{A} 1^{A} | \hat{g} | 0^{B} 1^{B} \rangle \langle A_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle t_{A_{1}} t_{B_{2}} \\ & + \frac{1}{2} \langle 0^{A} 0^{B} | \hat{g} | 0^{A} 1^{B} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{A_{1}} t_{B_{2}} \\ & + \frac{1}{2} \langle 1^{A} 0^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{A_{1}} t_{B_{2}} \\ & + \frac{1}{2} \langle 0^{A} 0^{B} | \hat{g} | 0^{A} 1^{B} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{1}} t_{B_{2}} \\ & + \frac{1}{2} \langle 1^{A} 0^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{1}} t_{B_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3)\rangle = \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|1^B\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_1\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|1^B\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_1\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|1^B\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_1\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|1^B\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_1\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\langle 0^B|\hat{h}|1^B\rangle\langle B_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|0^B1^B\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|1^B1^B\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|0^B1^B\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|1^B1^B\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\langle 0^B0^B|\hat{g}|1^B0^B\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B0^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B0^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B1^I|\hat{g}|1^B1^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B1^I|\hat{g}|1^B1^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B0^I\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1,B_3} \\ &+ \frac{1}{2}\sum_{I}\langle 0^B0^I|\hat$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{-}|\hat{b}_{\beta}^$$

$$\begin{split} &+\frac{1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|0^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{1},B_{3}} \\ &+\frac{1}{2}\langle 0^{B}|\hat{h}|1^{B}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{1}}t_{B_{3}} \\ &+\frac{1}{2}\langle 0^{B}|\hat{h}|1^{B}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{1}}t_{B_{3}} \\ &+\frac{1}{2}\langle 0^{B}0|\hat{h}|1^{B}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{1}}t_{B_{3}} \\ &+\frac{1}{2}\langle 0^{B}0^{B}|\hat{g}|0^{B}1^{B}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{1}}t_{B_{3}} \\ &+\frac{1}{2}\langle 0^{B}0^{B}|\hat{g}|1^{B}0^{B}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}} \\ &+\frac{1}{2}\langle 0^{B}0^{B}|\hat{g}|$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_3 | \hat{0}_\beta^+ \hat{1}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\beta^+ \hat{0}_\beta | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_3 | \hat{0}_\alpha^+ \hat{1}_\alpha | B_1 \rangle \langle I_0 | \hat{1}_\alpha^+ \hat{1}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_3 | \hat{0}_\beta^+ \hat{1}_\beta | B_1 \rangle \langle I_0 | \hat{1}_\beta^+ \hat{1}_\beta | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_3 | \hat{1}_\alpha^+ \hat{0}_\alpha | B_1 \rangle \langle I_0 | \hat{0}_\beta^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_3 | \hat{1}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\beta^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_3 | \hat{1}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_0 | \hat{1}_\beta^+ \hat{1}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_3 | \hat{1}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_3 | \hat{0}_\beta^+ \hat{1}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_3 | \hat{0}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_3 | \hat{0}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_3 | \hat{0}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_3 | \hat{0}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_3 | \hat{0}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_3 | \hat{0}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\langle 0^A 0^B | \hat{g} | 0^A 1^B \rangle \langle A_1 | \hat{0}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_0 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\langle 0^A 0^B | \hat{g} | 0^A 1^B \rangle \langle A_1 | \hat{0}_\beta^+ \hat{0}_\beta | A_1 \rangle \langle B_3 | \hat{0}_\beta^+ \hat{0}_\beta | B_1 \rangle t_{A_1} t_{B_3} \\ &+\frac{1}{2}\langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_1 | \hat{0}_\alpha$$

$$\begin{split} & + \frac{-1}{2} \langle 1^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_1} t_{B_3} \\ & + \frac{-1}{2} \langle 1^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{A_1} t_{B_3} \\ & + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 0^A 1^B \rangle \langle A_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_1} t_{B_3} \\ & + \frac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_1} t_{B_3} \\ & + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 0^A 1^B \rangle \langle A_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_1} t_{B_3} \\ & + \frac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_1} t_{B_3} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I|\hat{h}|0^J\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_9} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^II^I|\hat{g}|I^I0^J\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_9} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^II^I|\hat{g}|0^JI^I\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_9} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^II^I|\hat{g}|0^JI^I\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_9} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^II^I|\hat{g}|0^JI^I\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_9} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^II^I|\hat{g}|1^I0^J\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{12},J_9} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^II^I|\hat{g}|1^I0^J\rangle\langle I_{12}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{12},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I0^J|\hat{g}|1^J0^J\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{12},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^I0^J|\hat{g}|1^J1^J\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\alpha_{\alpha}|J_0\rangle t_{A_1,B_1}t_{I_{12},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^J1^J\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{I_{12},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^J0^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_0|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{I_{12},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^J0^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1,B_1}t_{I_{12},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J0^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1,B_1}t_{I_{12},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^A0^I|\hat{g}|0^A0^J\rangle\langle A_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle (1^{A}0^{I} | \hat{g} | 1^{A}0^{J} \rangle \langle A_{1} | \hat{1}_{\beta}^{+} | \hat{f}_{\beta} | A_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha} | J_{0} \rangle A_{1,B_{1}} t_{I_{12},J_{9}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle (0^{B}0^{I} | \hat{g} | 0^{B}0^{J} \rangle \langle B_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | B_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{12},J_{9}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle (0^{B}0^{H} | \hat{g} | 1^{B}0^{J} \rangle \langle B_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | B_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{12},J_{9}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle (0^{B}0^{H} | \hat{g} | 0^{I}0^{J} \rangle \langle B_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | B_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{12},J_{9}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle (0^{B}0^{I} | \hat{g} | 0^{B}0^{J} \rangle \langle B_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta} | B_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{12},J_{9}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle (0^{B}0^{I} | \hat{g} | 0^{B}0^{J} \rangle \langle B_{1} | \hat{0}_{\alpha}^{+} | \hat{a}_{\beta} | B_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{10} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{12},J_{9}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle (0^{B}0^{I} | \hat{g} | 1^{B}0^{J} \rangle \langle B_{1} | \hat{a}_{\alpha}^{+} | \hat{a}_{\beta} | B_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{10} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{12},J_{9}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle (0^{I}0^{I} | \hat{g} | 1^{J}0^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | \hat{a}_{\alpha}^{+} | \hat{a}_{\alpha}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{12},J_{9}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle (0^{I}1^{I} | \hat{g} | 0^{J}1^{I} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | \hat{a}_{\alpha}^{+} | \hat{a}_{\alpha}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12},J_{9}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle (0^{I}1^{I} | \hat{g} | 0^{J}1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | \hat{a}_{\alpha}^{+} | \hat{a}_{\alpha}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12},J_{9}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle (0^{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}} \end{split}$$

$$\langle (A_1, B_1) | \hat{H} | (A_1, B_1, I_{14}, J_7) \rangle =$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I | \hat{h} | 0^J \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{-1}{8} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | I^I 0^J \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | \hat{a}_{\beta}^{+} | \hat{g}_{\beta}^{-} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{-1}{8} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | 0^J I^I \rangle \langle I_{14} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{+} | \hat{g}_{\beta}^{-} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | 0^J I^I \rangle \langle I_{14} | \hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{+} | \hat{g}_{\alpha}^{-} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | 1^I 0^J \rangle \langle I_{14} | \hat{1}_{\alpha}^{+} \hat{g}_{\beta}^{+} | \hat{g}_{\alpha}^{-} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | 1^I 0^J \rangle \langle I_{14} | \hat{1}_{\beta}^{+} \hat{g}_{\beta}^{+} | \hat{g}_{\beta}^{-} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | 1^I 0^J \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | \hat{g}_{\beta}^{+} | \hat{g}_{\beta}^{-} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J | \hat{g} | 1^J 1^J \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | 1_{\beta}^{-} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^I 0^K | \hat{g} | 0^J 0^K \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle \langle K_0 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle \langle K_0 | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | K_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^I 0^I | \hat{g} | 0^J 1^K \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^{-} | J_0 \rangle \langle K_0 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_0 \rangle t_{A_1, B_1} t_{I_{14}, J_7}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^I 0^J | \hat{g} | 0^K 0^K \rangle \langle I_{14} | \hat{$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^B 0^J \rangle \langle B_1 | \hat{0}_\beta^\dagger \hat{g}_\beta^\dagger | B_1 \rangle \langle I_{14} | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_{14} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \int_{J} \langle 0^B 0^I | \hat{g} | 0^B 0^J \rangle \langle B_1 | \hat{0}_\beta^\dagger \hat{o}_\alpha^\dagger | B_1 \rangle \langle I_{14} | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_{14} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \int_{J} \langle 1^B 0^I | \hat{g} | 1^B 0^J \rangle \langle B_1 | \hat{1}_\beta^\dagger \hat{a}_\beta^\dagger | B_1 \rangle \langle I_{14} | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_{144} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^B | \hat{g} | 0^I 0^J \rangle \langle B_1 | \hat{0}_\beta^\dagger \hat{0}_\beta^\dagger | B_1 \rangle \langle I_{14} | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_{144} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^B 0^J 0^J \rangle \langle B_1 | \hat{0}_\beta^\dagger \hat{0}_\beta^\dagger | B_1 \rangle \langle I_{14} | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_{144} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^B 0^J 0^J \rangle \langle I_{14} | \hat{0}_\beta^\dagger | \hat{0}_\beta^\dagger | J_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_3 J_4 | I_{144} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I | \hat{0}_\beta^\dagger | I^I 0^J \rangle \langle I_{14} | \hat{0}_\beta^\dagger | \hat{0}_\beta^\dagger | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_{144} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I | \hat{0}_\beta^\dagger | I^I 0^J \rangle \langle I_{14} | \hat{0}_\beta^\dagger | \hat{0}_\beta^\dagger | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_{144} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I | \hat{0}_\beta^\dagger | I^I 0^J \rangle \langle I_{14} | \hat{1}_\alpha^\dagger \hat{0}_\beta^\dagger | \hat{0}_\alpha^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_{144} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I | \hat{0}_\beta^\dagger | I^I 0^J \rangle \langle I_{14} | \hat{1}_\alpha^\dagger \hat{0}_\beta^\dagger | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_{144} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I | \hat{0}_\beta^\dagger | I^I 0^J \rangle \langle I_{14} | \hat{0}_\beta^\dagger | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_{14} | I_{144} | J_7 \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I | \hat{0}_\beta^\dagger | I^I 0^J \rangle \langle I_{14} | \hat{0}_\beta^\dagger | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0 \rangle \langle I_1 | I_{144} | I_{144} \rangle \partial_7 \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I | \hat{0}_\beta^\dagger | I^I \rangle \langle I_{14} | \hat{0}_\beta^\dagger | I_0 \rangle \langle J_7 | \hat{0}_\beta^\dagger | J_0$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}} \end{split}$$

$$\langle (A_1, B_1) | \hat{H} | (A_1, B_1, I_{12}, J_{10}) \rangle =$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I | \hat{h} | J^J \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | I^I J^J \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | \hat{1}_{\alpha}^+ \hat{a}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | I^J I^J \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | \hat{a}_{\alpha}^+ \hat{a}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | I^J I^J \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | \hat{a}_{\alpha}^+ \hat{a}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | I^J I^J \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | \hat{a}_{\alpha}^+ \hat{a}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{a}_{\alpha}^- | J_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | I^J I^J \rangle \langle I_{12} | \hat{a}_{\alpha}^+ | \hat{a}_{\alpha}^+ \hat{a}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{a}_{\alpha}^- | J_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I I^I | \hat{g} | I^J I^J \rangle \langle I_{12} | \hat{a}_{\alpha}^+ | \hat{a}_{\alpha}^+ \hat{a}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{a}_{\alpha}^- | J_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I I^J | \hat{g} | 0^J I^J \rangle \langle I_{12} | \hat{a}_{\alpha}^+ | \hat{a}_{\alpha}^- | \hat{a}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{a}_{\alpha}^- | J_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^I I^J | \hat{g} | 0^J I^J \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} | \hat{a}_{\beta}^+ \hat{g}_{\alpha}^- | J_0 \rangle \langle K_0 | \hat{0}_{\alpha}^+ \hat{a}_{\alpha}^- | K_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^I I^J | \hat{g} | 0^K 0^K \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} | \hat{a}_{\alpha}^- | J_0 \rangle \langle K_0 | \hat{0}_{\alpha}^+ \hat{a}_{\alpha}^- | K_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^I I^J | \hat{g} | 0^K 0^K \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle \langle K_0 | \hat{0}_{\alpha}^+ \hat{a}_{\alpha}^- | K_0 \rangle t_{A_1, B_1} t_{I_{12}, J_{10}}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^I I^J | \hat{g} | 0^K 0^K \rangle \langle I_{12$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B O^I [\hat{g}] 1^B 1^J \rangle \langle B_I [\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^-] B_I \rangle \langle I_{I2} [\hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1,B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B O^B [\hat{g}] O^I 1^J \rangle \langle B_I [\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^-] B_I \rangle \langle I_{I2} [\hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1,B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B O^I [\hat{g}] O^B 1^J \rangle \langle B_I [\hat{0}_{\beta}^+ \hat{0}_{\alpha}^-] B_I \rangle \langle I_{I2} [\hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1,B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B O^I [\hat{g}] O^B 1^J \rangle \langle B_I [\hat{0}_{\beta}^+ \hat{0}_{\beta}^-] B_I \rangle \langle I_{I2} [\hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1,B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I [\hat{g}] D^B 1^J \rangle \langle B_I [\hat{0}_{\beta}^+ \hat{1}_{\beta}^-] B_I \rangle \langle I_{I2} [\hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I [\hat{g}] D^B 1^J \rangle \langle I_{12} [\hat{0}_{\alpha}^+ | I_{\alpha}^+ \hat{a}_{\alpha}^-] I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I I^I [\hat{g}] I^J I^J \rangle \langle I_{12} [\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^+ \hat{a}_{\alpha}^-] I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I I^I [\hat{g}] I^J I^J \rangle \langle I_{12} [\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^+ \hat{a}_{\alpha}^-] I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I I^I [\hat{g}] I^J I^J \rangle \langle I_{12} [\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^+ \hat{a}_{\alpha}^-] I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I I^I [\hat{g}] I^J I^J \rangle \langle I_{12} [\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^+ \hat{a}_{\alpha}^-] I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I I^I [\hat{g}] I^J I^J \rangle \langle I_{12} [\hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} \\ & + \frac{1}{4} \sum_{J} \sum_{J} \langle 0^I I^J [\hat{g}] I^J I^J \rangle \langle I_{12} [\hat{0}_{\alpha}^+ | I_0 \rangle \langle J_{10} [\hat{1}_{\alpha}^-] J_0 \rangle \langle K_0 [\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^-] K_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle\mathbf{1}^{B}\mathbf{1}^{B}|\hat{g}|0^{I}\mathbf{1}^{J}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle\mathbf{0}^{B}\mathbf{0}^{I}|\hat{g}|0^{B}\mathbf{1}^{J}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle\mathbf{1}^{B}\mathbf{0}^{I}|\hat{g}|1^{B}\mathbf{1}^{J}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}} \end{split}$$

$$\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8)\rangle = \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I |\hat{h}|1^J \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle I_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{-1}{8} \sum_{I} \sum_{J} \langle 0^I 1^I |\hat{g}|1^J 1^J \rangle \langle I_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{-1}{8} \sum_{I} \sum_{J} \langle 0^I 1^I |\hat{g}|1^J 1^J \rangle \langle I_{14}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I |\hat{g}|1^J 1^J \rangle \langle I_{14}|\hat{1}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I |\hat{g}|1^J 1^J \rangle \langle I_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I 1^I |\hat{g}|1^J 1^J \rangle \langle I_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I 1^J |\hat{g}|1^J 1^J \rangle \langle I_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^J |\hat{g}|1^J 1^J \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^+_{\alpha}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|J_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^I 0^J |\hat{g}|0^J 1^J \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^I 0^K |\hat{g}|1^J 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{1}{4} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^K |\hat{g}|1^J 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_0|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{1}{4} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^K |\hat{g}|1^J 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^A 1^J \rangle \langle A_1|\hat{0}^+_{\beta}|\hat{0}^-_{\beta}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0 \rangle t_{A_1,B_1}t_{I_{14},J_8} \\ + \frac{$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle l^{B} 0^{I} | \hat{g} | l^{B} 1^{J} \langle B 1 | \hat{1}_{\beta}^{\perp} | \hat{g} | B_{1} \rangle \langle I_{14} | \hat{0}_{\beta}^{\perp} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{\perp} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{14},J_{8}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{B} 0^{B} | \hat{g} | l^{B} 1^{J} \langle B 1 | \hat{1}_{\alpha}^{\perp} | \hat{a}_{\alpha} | B_{1} \rangle \langle I_{14} | \hat{0}_{\beta}^{\perp} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{\perp} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{14},J_{8}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{B} 0^{B} | \hat{g} | 0^{I} 1^{J} \rangle \langle B_{1} | \hat{0}_{\beta}^{\perp} | \hat{g}_{\beta}^{\perp} | B_{1} \rangle \langle I_{14} | \hat{0}_{\beta}^{\perp} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{\perp} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{14},J_{8}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} | \hat{h} | 1^{J} \rangle \langle I_{14} | \hat{0}_{\beta}^{\perp} | \hat{g}_{\beta}^{\perp} | \hat{g}_{\beta}^{\parallel} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{8}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} | 1^{I} | 1^{I} | 1^{J} \rangle \langle I_{14} | \hat{0}_{\beta}^{\perp} | \hat{g}_{\beta}^{\perp} | \hat{g}_{\beta}^{\parallel} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{8}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^{I} | 1^{I} | 1^{I} | 1^{J} \rangle \langle I_{14} | \hat{0}_{\beta}^{\perp} | \hat{g}_{\beta}^{\perp} | \hat{g}_{\beta}^{\parallel} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{\parallel} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{8}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^{I} | 1^{I} | \hat{g} | 1^{J} | 1^{J} \rangle \langle I_{14} | \hat{g}_{\beta}^{\perp} | \hat{g}_{\beta}^{\parallel} | \hat{g}_{\alpha}^{\parallel} | I_{0} \rangle \langle J_{8} | \hat{I}_{\beta}^{\parallel} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{8}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} | 1^{I} | \hat{g} | 1^{J} | 1^{J} \rangle \langle I_{14} | \hat{g}_{\beta}^{\perp} | \hat{g}_{\beta}^{\parallel} | \hat{g}_{\alpha}^{\parallel} | I_{0} \rangle \langle J_{8} | \hat{I}_{\beta}^{\parallel} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{8}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} | 1^{I} | \hat{g} | 1^{J} | 1^{J} \rangle \langle I_{14} | \hat{g}_{\beta}^{\perp} | \hat{g}_{\beta}^{\parallel} | \hat{g}_{\alpha}^{\parallel} | 1^{J} \rangle \langle I_{14} | \hat{g}_{\beta}^{\perp} | 1^{J} | 1^{J} \rangle \langle I_{14} | \hat{g}_{\beta}^{\perp} | 1^{J} \rangle \langle I_{14} | \hat{g}_{\beta}^{\perp} | 1^{J} | 1^{J} \rangle \langle I_{14} | 1^{J} | 1^{J} | 1^{J} \rangle \langle I_{14} | 1^{J} | 1^{J} | 1^{J} \rangle \langle I_{14} | 1^{J} | 1^{J} | 1^{J} \langle I_{14} | 1^{J} | 1^{J} | 1^{J} \rangle \langle I_{14} | 1^{J} | 1^{J$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{B} 0^{B} | \hat{g} | 0^{I} 1^{J} \rangle \langle B_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{8}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 1^{B} | \hat{g} | 0^{I} 1^{J} \rangle \langle B_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_9)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^I|\hat{h}|0^J\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_0|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{11},J_0} \\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 0^I I^I|\hat{g}|0^I 0^J\rangle\langle I_{11}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 0^I 0^I|\hat{g}|1^I 0^J\rangle\langle I_{11}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^I|\hat{g}|1^I 0^J\rangle\langle I_{11}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^I 0^I|\hat{g}|1^I 0^J\rangle\langle I_{11}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^I I^I|\hat{g}|0^I 0^J\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^I I^I|\hat{g}|0^I 0^J\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I I^I|\hat{g}|0^I 0^J\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^I 0^J|\hat{g}|0^J 0^J\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 1^I 0^J|\hat{g}|0^J 0^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^I 0^J|\hat{g}|0^J 0^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 1^I 0^J|\hat{g}|0^J 0^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^I 0^J|\hat{g}|0^J 0^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_{11},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^J A^J\rangle\langle A_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle$$

$$\begin{split} & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^B | \hat{g} | 1^I 0^J \rangle \langle B_1 | \hat{1}_{\alpha}^{\perp} \hat{1}_{\alpha} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{\perp} | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^{\perp} | J_0 \rangle t_{A_1, B_1} t_{I_{11}, J_9} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 0^B 0^J \rangle \langle B_1 | \hat{0}_{\beta}^{\perp} \hat{g}_{\beta}^{\parallel} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{\perp} | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^{\parallel} | J_0 \rangle t_{A_1, B_1} t_{I_{11}, J_9} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I | \hat{h} | 0^J \rangle \langle B_1 | \hat{1}_{\alpha}^{\perp} | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^{\parallel} | J_0 \rangle t_{A_1} t_{B_1} t_{I_{11}, J_9} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I | \hat{g} | 0^I 0^J \rangle \langle I_{11} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\parallel} | J_0 \rangle t_{A_1} t_{B_1} t_{I_{11}, J_9} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I 0^I | \hat{g} | 0^I 0^J \rangle \langle I_{11} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\parallel} | J_0 \rangle t_{A_1} t_{B_1} t_{I_{11}, J_9} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I 0^I | \hat{g} | 1^I 0^J \rangle \langle I_{11} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\parallel} | J_0 \rangle t_{A_1} t_{B_1} t_{I_{11}, J_9} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I 0^I | \hat{g} | 1^I 0^J \rangle \langle I_{11} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\parallel} | J_0 \rangle t_{A_1} t_{B_1} t_{I_{11}, J_9} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^I 0^I | \hat{g} | 1^I 0^J \rangle \langle I_{11} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\parallel} | t_0 \rangle t_{J_1} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\perp} | t_0 \rangle t_{J_1} t_{A_1} t_{B_1} t_{I_{11}, J_9} \\ & + \frac{1}{8} \sum_{J} \sum_{J} \langle 0^I 1^I | \hat{g} | 0^I 0^J \rangle \langle I_{11} | \hat{1}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\perp} | \hat{0}_{\alpha}^{\parallel} | t_0 \rangle t_{J_1} | \hat{0}_{\alpha}^{\perp} | t_0 \rangle t_{J_1} t_{A_1} t_{A$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{9}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_7)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^I|\hat{h}|0^J\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_{13}|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_{13}|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_{13}|\hat{0}_{\beta}^{\dagger}|\hat{1}_{\alpha}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_{13}|J_0^{\dagger}|I_{13},J_7\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^II^I|\hat{g}|0^I0^J\rangle\langle I_{13}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_{13},I_{13},J_7\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^II^I|\hat{g}|0^I0^J\rangle\langle I_{13}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_{13},J_7\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I0^I|\hat{g}|I^I0^J\rangle\langle I_{13}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_{13},I_{13},J_7\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^I0^I|\hat{g}|I^I0^J\rangle\langle I_{13}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_{13},I_{13},J_7\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^I0^I|\hat{g}|I^I0^J\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_{13},I_{13},J_7\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^I0^I|\hat{g}|0^I0^J\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}\hat{0}_{\alpha}|J_0\rangle\langle I_{13},I_{13},J_7\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 1^I0^J|\hat{g}|0^I0^J\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}\hat{0}_{\alpha}|J_0\rangle\langle I_{13},I_{13},J_7\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle I^I0^K|\hat{g}|0^J0^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_0|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|K_0\rangle\langle I_{13},I_{13},J_7\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle I^I0^K|\hat{g}|0^J0^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle I_0|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|K_0\rangle\langle I_{13},I_{13$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle O^B O^B | \hat{g} | I^I O^J \rangle \langle B_1 | \hat{0}_\beta^+ \hat{0}_\beta^- | B_1 \rangle \langle I_{13} | \hat{1}_\beta^+ | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle k_{A_1, B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle I^B | B_1^- | \hat{g} | I^I O^J \rangle \langle B_1 | \hat{1}_\beta^+ \hat{1}_\beta^- | B_1 \rangle \langle I_{13} | \hat{1}_\beta^+ | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle k_{A_1, B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle I^I | \hat{h} | O^J \rangle \langle I_{13} | \hat{1}_\beta^+ | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle k_{A_1} t_{B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle O^I I^I | \hat{g} | O^I O^J \rangle \langle I_{13} | \hat{0}_\alpha^+ \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle k_{A_1} t_{B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle O^I I^I | \hat{g} | O^I O^J \rangle \langle I_{13} | \hat{0}_\alpha^+ \hat{0}_\beta^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle k_{A_1} t_{B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle O^I I^I | \hat{g} | O^I O^J \rangle \langle I_{13} | \hat{0}_\beta^+ \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle k_{A_1} t_{B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle O^I O^I | \hat{g} | I^I O^J \rangle \langle I_{13} | \hat{0}_\beta^+ \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle k_{A_1} t_{B_1} t_{I_{13}, J_7} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle O^I I^I | \hat{g} | O^I O^J \rangle \langle I_{13} | \hat{0}_\beta^+ \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle k_{A_1} t_{B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle O^I I^I | \hat{g} | O^I O^J \rangle \langle I_{13} | \hat{1}_\beta^+ | I_0 \rangle \langle J_7 | \hat{0}_\alpha^+ \hat{0}_\beta^- \hat{0}_\alpha^- | J_0 \rangle k_{A_1} t_{B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle O^I I^I | \hat{g} | O^I O^J \rangle \langle I_{13} | \hat{1}_\beta^+ | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle \langle K_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | K_0 \rangle k_{A_1} t_{B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{J} \sum_{J} \langle I^I O^J | \hat{g} | O^J O^J \rangle \langle I_{13} | \hat{1}_\beta^+ | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle \langle K_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | K_0 \rangle k_{A_1} t_{B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{J} \sum_{J} \sum_{K} \langle I^I O^K | \hat{g} | O^J O^K \rangle \langle I_{13} | \hat{1}_\beta^+ | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle \langle K_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | K_0 \rangle t_{A_1} t_{B_1} t_{I_{13}, J_7} \\ & + \frac{1}{4} \sum_{J} \sum_{J} \langle I^I I^J | \hat{g} | O^J O^J \rangle \langle A_1 | \hat{0}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle$$

$$\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10})\rangle = \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I|\hat{h}|J^J \rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{8} \sum_{J} \sum_{J} \langle 0^IJ^I|\hat{g}|0^IJ^J \rangle \langle I_{11}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{8} \sum_{J} \int_{J} \langle 0^IJ^I|\hat{g}|1^IJ^J \rangle \langle I_{11}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^IJ^I|\hat{g}|1^IJ^J \rangle \langle I_{11}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^IJ^I|\hat{g}|0^IJ^J \rangle \langle I_{11}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^IJ^I|\hat{g}|0^IJ^J \rangle \langle I_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^IJ^I|\hat{g}|0^IJ^J \rangle \langle I_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 0^IJ^I|\hat{g}|0^IJ^J \rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{+}|\hat{0}_{\alpha}^{-}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 1^IJ^I|\hat{g}|1^JJ^J \rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle I_{01}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 1^IJ^I|\hat{g}|1^JT^K \rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle I^IJ^K|\hat{g}|1^JT^K \rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle I^IJ^K|\hat{g}|1^JT^K \rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_1,B_1}t_{I_{11},J_{10}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A^I|\hat{g}|0^A^IJ$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{IB} I^{I} | \hat{g} | 1^{B} I^{J} \rangle \langle B_{1} | \hat{i}_{\beta}^{+} | \hat{i}_{\beta} | B_{1} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{i}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}, J_{10}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} | \hat{h} | I^{J} \rangle \langle I_{11} | \hat{i}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{i}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{10}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 0^{I} I^{J} \rangle \langle I_{11} | \hat{i}_{\alpha}^{+} | \hat{i}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{i}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{10}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{11} | \hat{i}_{\alpha}^{+} \hat{a}_{\alpha}^{+} | \hat{a}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{i}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{10}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{11} | \hat{a}_{\alpha}^{+} \hat{a}_{\alpha}^{+} \hat{a}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{i}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{10}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 0^{I} I^{J} \rangle \langle I_{11} | \hat{a}_{\alpha}^{+} \hat{a}_{\alpha}^{+} \hat{a}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{a}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{10}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 0^{I} I^{J} \rangle \langle I_{11} | \hat{a}_{\alpha}^{+} \hat{a}_{\alpha}^{+} \hat{a}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{a}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{10}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 0^{I} I^{I} | \hat{g} | 0^{I} I^{J} \rangle \langle I_{11} | \hat{a}_{\alpha}^{+} \hat{a}_{\alpha}^{+} \hat{a}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{a}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{10}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I} I^{J} | \hat{g} | 0^{I} I^{J} \rangle \langle I_{11} | \hat{a}_{\alpha}^{+} \hat{a}_{\alpha}^{+} \hat{a}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{a}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{10}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I} I^{J} | \hat{g} | 0^{I} I^{J} \rangle \langle I_{11} | \hat{a}_{\alpha}^{+} \hat{a}_{0}^{-} \hat{a}_{\alpha}^{-} | J_{0} \rangle \langle I_{10} | \hat{a}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{10}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I} I^{J} | \hat{g} | 0^{I} I^{J} \rangle \langle I_{11} | \hat{a}_{\alpha}^{+} | \hat{a}_{0}^{-} \rangle \langle I_{10} | \hat{a}_{\alpha}^{-} \hat{a}_{\alpha}^{-} \rangle \langle I_{10} |$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_8)\rangle = \\ &+\frac{1}{4}\sum_I \sum_J \langle 1^I|\hat{h}|1^J \langle I_{13}|\hat{a}_{\beta}^{\dagger}|I_0 \rangle \langle J_8|\hat{a}_{\beta}^{\dagger}|J_0 \rangle \langle I_{A_1,B_1}I_{I_{13},J_8} \\ &+\frac{1}{4}\sum_I \sum_J \langle 0^I O^I|\hat{g}|1^I I^J \rangle \langle I_{13}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}\hat{a}_{\alpha}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_I \sum_J \langle 0^I I^I|\hat{g}|0^I I^J \rangle \langle I_{13}|\hat{0}_{\alpha}^{\dagger}\hat{a}_{\beta}^{\dagger}\hat{a}_{\beta}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_I \sum_J \langle 0^I I^I|\hat{g}|0^I I^J \rangle \langle I_{13}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{0}_{\alpha}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{8}\sum_I \sum_J \langle 0^I I^I|\hat{g}|1^I I^J \rangle \langle I_{13}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{8}\sum_I \sum_J \langle 0^I I^I|\hat{g}|0^I I^J \rangle \langle I_{13}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{8}\sum_I \sum_J \langle 0^I I^I|\hat{g}|0^I I^J \rangle \langle I_{13}|\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_I \sum_J \langle 1^I I^J|\hat{g}|0^I I^J \rangle \langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_I \sum_J \langle 1^I I^J|\hat{g}|1^J I^J \rangle \langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle \langle K_0|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|K_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_I \sum_J \langle 1^I I^K|\hat{g}|1^J I^K \rangle \langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle \langle K_0|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|K_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_I \sum_J \langle I^I I^K|\hat{g}|1^J I^K \rangle \langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle \langle K_0|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|K_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_I \sum_J \langle I^I I^K|\hat{g}|1^J I^K \rangle \langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle \langle K_0|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}|K_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_I \sum_J \langle I^I I^I |\hat{g}|1^K I^K \rangle \langle I_{13}|\hat{0}_{\beta}^{\dagger}|J_0 \rangle \langle J_8|\hat{1}_{\beta}^{\dagger}|J_0 \rangle \langle K_0|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|K_0 \rangle t_{A_1,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_I \sum_J \langle 0^A I^I |\hat{g}|0^A I^J \rangle \langle A_1|\hat{0}$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} (1^{I} |\hat{h}|^{1} |J) \langle I_{13} |\hat{1}_{\beta}^{\perp} |I_{0} \rangle \langle J_{8} |\hat{1}_{\beta}^{\perp} |J_{0} \rangle \langle J_{8} |\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_12)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I|\hat{h}|0^J\langle I_0|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^IO^I|\hat{h}|0^IO^J\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^IO^I|\hat{g}|0^IO^J\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^IO^I|\hat{g}|0^JO^I\rangle\langle I_0|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\alpha}|J_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^IO^I|\hat{g}|0^JO^I\rangle\langle I_0|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^IO^J|\hat{g}|1^JO^I\rangle\langle I_0|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^IO^J|\hat{g}|1^JO^I\rangle\langle I_0|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^IO^I|\hat{g}|1^JO^I\rangle\langle I_0|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^IO^I|\hat{g}|0^JO^I\rangle\langle I_0|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^IO^I|\hat{g}|0^JO^K\rangle\langle I_0|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{K}\langle 0^IO^K|\hat{g}|0^JO^K\rangle\langle I_0|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{K}\langle 0^IO^K|\hat{g}|0^JO^K\rangle\langle I_0|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{K}\langle 0^IO^K|\hat{g}|0^JO^K\rangle\langle I_0|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle L_{A_1,B_1}L_{I_9,J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^AO^I|\hat{g}|0^AO^J\rangle\langle A|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle\langle A|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle\langle A|\hat{0}_{\alpha}^{+}|\hat{0}_{\alpha}^{-}|K_0\rangle$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle I_{g}|\hat{0}_{\beta}^{\dagger}\hat{g}_{\beta}^{\dagger}\hat{g}_{\alpha}^{\dagger}|A_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle I_{g}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{g}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{\dagger}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{g}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{g}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle J_{12}|\hat{1}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{12}}\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{g}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle J_{12}|\hat{1}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{12}}\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{g}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{\dagger}\hat{a}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{12}}\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{g}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{\dagger}\hat{a}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{12}}\\ &+\frac{1}{8}\sum_{I}\sum_{J}\sum_{J}\langle 0^{I}0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{g}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{\dagger}\hat{a}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^{I}0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{g}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{\dagger}\hat{a}_{\alpha}^{\dagger}\hat{a}_{\alpha}|J_{0}\rangle\langle I_{11}\hat{a}_{\alpha}^{\dagger}\hat{a}_{\alpha}^{\dagger}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{g}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle I_{12}|\hat{0}_{\alpha}^{\dagger}^{\dagger}|J_{0}\rangle\langle I_{0}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle I_{12}|\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle\langle I_{11}\hat{a}_{\alpha}^{\dagger}\hat{a}_{\alpha}^{\dagger}|I_{0}\rangle\langle I_{12}|\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle\langle I_{11}\hat{a}_{\alpha}^{\dagger}\hat{a}_{\alpha}^{\dagger}|I_{0}\rangle\langle I_{12}|\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle\langle I_{11}\hat{a}_{\alpha}^{\dagger}|I_{0}\rangle\langle I_{12}|\hat{0}_{\alpha}^{\dagger}|I_{0}\rangle\langle I_{12}|\hat{0}_{\alpha}^{\dagger}|I$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{14})\rangle =$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} |\hat{h}|0^{J} \rangle \langle I_{I} |\hat{0}_{\sigma}^{\dagger} |I_{0} \rangle \langle I_{1} |\hat{0}_{\sigma}^{\dagger} |I_{0} \rangle \langle I_{2} |\hat{0}_{\sigma}^{\dagger} |I_{2} \rangle \langle I_{2} |\hat{0}_{\sigma}^{\dagger} |I_{2} |I_{2} \rangle \langle I_{2} |I_{2} |I_{2} \rangle \langle I_{2} |I_{2} |I_{2} |I_{2} \rangle \langle I_{2} |I_{2} \rangle \langle I_{2} |I_{2} |I_{2} \rangle \langle$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle I_{I}(\hat{0}_{\alpha}^{+}\hat{1}_{\beta}\hat{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle L_{A} t_{B_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{I}(\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}|J_{0}\rangle L_{A} t_{B_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{I}(\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}|\hat{1}_{\beta}|J_{0}\rangle L_{A} t_{B_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{I}(\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{+}|\hat{1}_{\beta}|J_{0}\rangle L_{A} t_{B_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{I}(\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{+}|\hat{1}_{\beta}|J_{0}\rangle L_{A} t_{B_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{I}(\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{+}|\hat{1}_{\beta}|J_{0}\rangle L_{A} t_{B_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{I}(\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{+}|\hat{1}_{\alpha}|J_{0}\rangle L_{A} t_{B_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{I}(\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle L_{A} t_{B_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{I}(\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle J_{0}\rangle\langle I_{0}^{+}|\hat{0}_{\beta}^{+}|\hat{0}_{\beta}|J_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle J_{$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_{12})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^I |\hat{h}|0^J \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle t_{A_1, B_1} t_{I_{10}, J_{12}}$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{I} [\hat{g}] I^{I}0^{J} \langle I_{10} [\hat{1}_{\bar{r}}^{\hat{b}} \hat{\sigma}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{21} [\hat{0}_{\bar{\sigma}}^{\hat{c}} | J_{0} \rangle \langle I_{11}, I_{10}, I_{12} \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}1^{I} [\hat{g}] I^{I}0^{J} \rangle \langle I_{10} [\hat{1}_{\bar{\tau}}^{\hat{c}} \hat{I}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{21} [\hat{0}_{\bar{\sigma}}^{\hat{c}} | I_{0}] \langle I_{12} | \hat{0}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{12} | I_{12} \rangle \langle I_{10}, I_{12}, I_{12}, I_{12}, I_{12} \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} [\hat{g}] I^{J}1^{J} \rangle \langle I_{10} [\hat{1}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{21} [\hat{0}_{\bar{\sigma}}^{\hat{c}} | \hat{\sigma}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{10}, I_{12}, I_{12}, I_{12}, I_{12} \rangle \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} [\hat{g}] I^{J}1^{J} \rangle \langle I_{10} [\hat{1}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{21} [\hat{\sigma}_{\bar{\sigma}}^{\hat{c}} | \hat{\sigma}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{10}, I_{12}, I_{12}, I_{12}, I_{12} \rangle \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I}0^{J} [\hat{g}] I^{J}1^{J} \rangle \langle I_{10} [\hat{1}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{21} [\hat{\sigma}_{\bar{\sigma}}^{\hat{c}} | \hat{\sigma}_{\bar{\sigma}}^{\hat{c}} | I_{0}] \rangle \langle I_{10}, I_{12}, I_{12}, I_{12}, I_{12} \rangle \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I}0^{J} [\hat{g}] I^{J}1^{J} \rangle \langle I_{10} [\hat{1}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{21} [\hat{\sigma}_{\bar{\sigma}}^{\hat{c}} | \hat{\sigma}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{10}, I_{12}, I_{12}, I_{12}, I_{12}, I_{12}, I_{12}, I_{12} \rangle \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I}0^{J} [\hat{g}] I^{J}0^{J} \rangle \langle I_{10} [\hat{\tau}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{21} [\hat{\sigma}_{\bar{\sigma}}^{\hat{c}} | \hat{\sigma}_{\bar{\sigma}}^{\hat{c}} | I_{0} \rangle \langle I_{12}, I_{12},$$

$$\begin{split} &+\frac{1}{8}\sum_{I}\sum_{J}\left\langle 1^{I}1^{J}[\hat{g}]0^{J}1^{J}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}|_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\left\langle 1^{I}0^{J}[\hat{g}]1^{J}J^{J}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\left\langle 1^{I}0^{J}[\hat{g}]1^{J}J^{J}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\left\langle 1^{I}0^{J}[\hat{g}]1^{J}J^{J}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\left\langle 1^{I}0^{J}[\hat{g}]1^{J}J^{J}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\left\langle 1^{I}1^{J}[\hat{g}]\hat{g}|0^{J}J^{J}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\sum_{J}\left\langle 1^{I}0^{K}[\hat{g}]0^{J}J^{K}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\left\langle 1^{I}0^{K}[\hat{g}]0^{J}J^{K}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\left\langle 1^{I}0^{K}[\hat{g}]0^{J}K^{K}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\left\langle 1^{I}0^{K}[\hat{g}]0^{J}K^{K}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\left\langle 1^{I}0^{K}[\hat{g}]0^{J}K^{K}\right\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\left\langle 1^{A}1^{I}[\hat{g}]0^{A}0^{J}\right\rangle \langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle \langle I_{10$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^I|\hat{h}|0^J\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,B_1}t_{I_8,J_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I0^I|\hat{g}|1^I0^J\rangle \langle I_8|\hat{1}^+_{\alpha}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,B_1}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{S}|\hat{\mathbf{1}}_{\alpha}^{\perp}\hat{\mathbf{2}}_{\beta}^{\perp}\hat{\mathbf{1}}_{\alpha}|0\rangle\langle 1_{A}|\hat{\mathbf{0}}_{\beta}^{\perp}\hat{\mathbf{1}}_{\beta}^{\perp}\hat{\mathbf{1}}_{\beta}|J_{0}\rangle\langle L_{A},B_{1}t_{Is},J_{14}\rangle\\ &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{S}|\hat{\mathbf{1}}_{\beta}^{\parallel}|I_{0}\rangle\langle J_{14}|\hat{\mathbf{0}}_{\beta}^{\perp}\hat{\mathbf{1}}_{\beta}^{\perp}\hat{\mathbf{1}}_{\beta}|J_{0}\rangle\langle L_{A},B_{1}t_{Is},J_{14}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{S}|\hat{\mathbf{1}}_{\beta}^{\parallel}|I_{0}\rangle\langle J_{14}|\hat{\mathbf{1}}_{\beta}^{\perp}\hat{\mathbf{0}}_{\beta}^{\perp}\hat{\mathbf{1}}_{\beta}^{\parallel}|J_{0}\rangle\langle L_{A},B_{1}t_{Is},J_{14}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{S}|\hat{\mathbf{1}}_{\beta}^{\parallel}|I_{0}\rangle\langle J_{14}|\hat{\mathbf{1}}_{\beta}^{\perp}\hat{\mathbf{0}}_{\beta}^{\perp}\hat{\mathbf{1}}_{\beta}^{\parallel}|J_{0}\rangle\langle L_{A},B_{1}t_{Is},J_{14}\rangle\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{S}|\hat{\mathbf{1}}_{\beta}^{\parallel}|I_{0}\rangle\langle J_{14}|\hat{\mathbf{1}}_{\beta}^{\perp}\hat{\mathbf{0}}_{\beta}^{\perp}\hat{\mathbf{1}}_{\beta}^{\parallel}|J_{0}\rangle\langle L_{A},B_{1}t_{Is},J_{14}\rangle\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{S}|\hat{\mathbf{1}}_{\beta}^{\parallel}|I_{0}\rangle\langle J_{14}|\hat{\mathbf{1}}_{\beta}^{\perp}\hat{\mathbf{0}}_{\beta}^{\perp}\hat{\mathbf{1}}_{\beta}^{\parallel}|J_{0}\rangle\langle L_{A},B_{1}t_{Is},J_{14}\rangle\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{S}|\hat{\mathbf{1}}_{\beta}^{\parallel}|I_{0}\rangle\langle J_{14}|\hat{\mathbf{1}}_{\beta}^{\perp}\hat{\mathbf{1}}_{\beta}^{\perp}|J_{0}\rangle\langle L_{0}|\hat{\mathbf{0}}_{\beta}^{\perp}|B_{1}^{\parallel}|J_{0}\rangle\langle L_{0}|\hat{\mathbf{0}}_{\beta}^{\perp}|J_{0}\rangle\langle L_{0}|\hat{\mathbf{0}}_{\beta}^{\perp}|J_{0}\rangle\langle L_{0}|\hat{\mathbf{0}}_{\beta}^{\perp}|J_{0}\rangle\langle L_{0}|J_{0}^{\perp}|J_{0}^{\perp}|J_{0}\rangle\langle L_{0}$$

$$\begin{split} &+\frac{1}{8}\sum_{I}\sum_{J} (1^{I}0^{J}|\hat{g}|1^{J}1^{J})\langle I_{8}|\hat{1}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}|J_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{8}\sum_{I}\sum_{J} (1^{I}0^{J}|\hat{g}|1^{J}1^{J})\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}|J_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{8}\sum_{I}\sum_{J} (1^{I}1^{J}|\hat{g}|0^{J}1^{J})\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}|J_{\alpha}|J_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{4}\sum_{I}\sum_{J} (1^{I}1^{J}|\hat{g}|0^{J}1^{J})\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}|J_{\alpha}|J_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{4}\sum_{I}\sum_{J} (1^{I}0^{J}|\hat{g}|1^{J}1^{J})\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}|J_{\alpha}|J_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{4}\sum_{I}\sum_{J} (1^{I}0^{K}|\hat{g}|0^{J}0^{K})\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{4}\sum_{I}\sum_{J} \sum_{J} (1^{I}0^{K}|\hat{g}|0^{J}0^{K})\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{4}\sum_{I}\sum_{J} \sum_{J} \sum_{K} (1^{I}1^{K}|\hat{g}|0^{J}1^{K})\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{4}\sum_{I}\sum_{J} \sum_{J} (1^{I}0^{J}|\hat{g}|0^{K}0^{K})\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{4}\sum_{I}\sum_{J} (1^{I}1^{K}|\hat{g}|0^{J}1^{K})\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{4}\sum_{I}\sum_{J} (1^{I}1^{J}|\hat{g}|0^{K}0^{K})\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{4}\sum_{I}\sum_{J} (1^{A}1^{I}|\hat{g}|0^{A}0^{J})\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle I_{A1}t_{B1}t_{Is},J_{14}\\ &+\frac{1}{4}\sum_{I}\sum_{J} (1^{A}1^{I}|\hat{g}|1^{A}0^{J})\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I|\hat{h}|1^J\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,B_1}t_{I_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I0^I|\hat{g}|0^I1^J\rangle \langle I_9|\hat{0}^+_{\beta}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,B_1}t_{I_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I1^I|\hat{g}|1^I1^J\rangle \langle I_9|\hat{0}^+_{\beta}\hat{1}^-_{\beta}\hat{1}^-_{\alpha}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,B_1}t_{I_9,J_{11}} \end{split}$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} O^{J} [\hat{g}] 0^{J} I^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{-} [I_{0}) \langle J_{11} [\hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-}] J_{0} \rangle t_{A_{1},B_{1}} t_{I_{9},J_{11}} \\ & + \frac{1}{8} \sum_{I} \int_{J} \langle 0^{I} O^{J} [\hat{g}] 0^{J} I^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{-} [I_{0}) \langle J_{11} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] J_{0} \rangle t_{A_{1},B_{1}} t_{I_{9},J_{11}} \\ & + \frac{1}{8} \sum_{I} \int_{J} \langle 0^{I} O^{J} [\hat{g}] 1^{J} O^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{-} [I_{0}) \langle J_{11} [\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] J_{0} \rangle t_{A_{1},B_{1}} t_{I_{9},J_{11}} \\ & + \frac{1}{8} \sum_{I} \int_{J} \langle 0^{I} O^{J} [\hat{g}] 1^{J} O^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{-} [I_{0}) \langle J_{11} [\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] J_{0} \rangle t_{A_{1},B_{1}} t_{I_{9},J_{11}} \\ & + \frac{1}{8} \sum_{I} \int_{J} \langle 0^{I} O^{J} [\hat{g}] 0^{J} I^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{-} [I_{0}) \langle J_{11} [\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] J_{0} \rangle t_{A_{1},B_{1}} t_{I_{9},J_{11}} \\ & + \frac{1}{8} \sum_{I} \int_{J} \int_{X} \langle 0^{I} O^{J} [\hat{g}] 0^{J} I^{J} \rangle \langle I_{9} [\hat{0}_{\alpha}^{-} [I_{0}) \langle J_{11} [\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] J_{0} \rangle t_{A_{1},B_{1}} t_{I_{9},J_{11}} \\ & + \frac{1}{4} \sum_{I} \int_{J} \int_{X} \langle 0^{I} O^{J} [\hat{g}] 0^{J} I^{J} \rangle \langle I_{9} [\hat{0}_{\alpha}^{-} [I_{0}) \langle J_{11} [\hat{1}_{\alpha}^{+} |\hat{0}_{\alpha}^{-} I_{0}] J_{0} \rangle t_{A_{1},B_{1}} t_{I_{9},J_{11}} \\ & + \frac{1}{4} \sum_{I} \int_{J} \int_{X} \langle 0^{I} I^{J} [\hat{g}] 0^{K} O^{K} \rangle \langle I_{9} [\hat{0}_{\alpha}^{-} [I_{0}) \langle J_{11} [\hat{1}_{\alpha}^{+} |\hat{0}_{0}^{-} k_{\alpha}^{-} K_{0}) t_{A_{1},B_{1}} t_{I_{9},J_{11}} \\ & + \frac{1}{4} \int_{I} \int_{J} \int_{X} \langle 0^{I} I^{J} [\hat{g}] 0^{K} O^{K} \rangle \langle I_{9} [\hat{0}_{\alpha}^{-} I_{0}^{-} J_{0}^{-} J_{11}] \hat{I}_{\alpha}^{+} J_{0}^{-} \langle K_{0} [\hat{0}_{\alpha}^{+} A_{0}^{-} K_{0}^{-} J_{0}^{-} J_{0}^{-$$

$$\begin{split} &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\alpha_{\alpha}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\alpha_{\alpha}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_{0}I|\hat{g}|0^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_{0}I|\hat{g}|0^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle I_{A1}t_{B1}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_{0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I |\hat{h}| 1^J \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle t_{A_1,B_1} t_{I_7,J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^I |\hat{g}| 0^I 1^J \rangle \langle I_7 |\hat{0}_{\alpha}^+ \hat{0}_{\beta}^- \hat{0}_{\alpha}^- |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle t_{A_1,B_1} t_{I_7,J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I |\hat{g}| 1^I 1^J \rangle \langle I_7 |\hat{0}_{\alpha}^+ \hat{1}_{\beta}^- \hat{1}_{\alpha}^- |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle t_{A_1,B_1} t_{I_7,J_{13}} \\ &+ \frac{-1}{8} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 0^J 1^J \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}| \hat{0}_{\beta}^+ \hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_1,B_1} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &+\frac{-1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]1^{J}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|J_{0}\rangle I_{A_{1},B_{1}}I_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]0^{J}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}\hat{1}_{\alpha}|J_{0}\rangle I_{A_{1},B_{1}}I_{I_{7},J_{13}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]1^{J}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{13}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}|J_{0}\rangle I_{A_{1},B_{1}}I_{I_{7},J_{13}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]1^{J}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{13}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\beta}^{\dagger}\hat{0}_{\alpha}^{\dagger}|J_{0}\rangle I_{A_{1},B_{1}}I_{I_{7},J_{13}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]0^{J}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{\dagger}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\alpha}|J_{0}\rangle I_{A_{1},B_{1}}I_{I_{7},J_{13}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{K}[\hat{g}]1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{\dagger}|J_{0}\rangle\langle I_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}|K_{0}\rangle I_{A_{1},B_{1}}I_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^{I}0^{K}[\hat{g}]1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{\dagger}|J_{0}\rangle\langle I_{0}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}|K_{0}\rangle I_{A_{1},B_{1}}I_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^{I}0^{I}K|\hat{g}]1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{\dagger}|J_{0}\rangle\langle I_{0}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|K_{0}\rangle I_{A_{1},B_{1}}I_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^{I}1^{K}|\hat{g}|1^{K}|\hat{I}^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{\dagger}|J_{0}\rangle\langle I_{0}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|K_{0}\rangle I_{A_{1},B_{1}}I_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{K}|\hat{I}^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{\dagger}|J_{0}\rangle\langle I_{0}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|K_{0}\rangle I_{A_{1},B_{1}}I_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{\dagger}|J_{0}\rangle\langle I_{0}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{\dagger}|K_{0}\rangle\langle I_{13}|\hat{I}_{\beta}^{\dagger}|J_{0}\rangle\langle I_{13}|\hat{I}_{\beta}^{\dagger}|J_{0}\rangle\langle I_{13}|\hat{I}_{\beta}^{\dagger}|J_{0}\rangle\langle I_{14}|I_{17},I_{13},I_{17},I_{13} \\ &+\frac{1}{4}\sum_{J}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_{0}\rangle\langle I_$$

$$\begin{split} &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{0}_{\beta}^{+}\hat{1}_{7}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{0}_{\alpha}^{+}\hat{1}_{7}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{K}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_{0}1|\hat{g}|0^{A_{1}1^{J}}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_{0}1|\hat{g}|0^{A_{1}1^{J}}\rangle\langle A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^I|\hat{h}|1^J\rangle \langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I0^I|\hat{g}|1^I1^J\rangle \langle I_{10}|\hat{1}_{\beta}^+\hat{0}_{\beta}^-\hat{0}_{\alpha}^-|I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^I1^I|\hat{g}|1^I1^J\rangle \langle I_{10}|\hat{1}_{\beta}^+\hat{1}_{\beta}^-\hat{1}_{\alpha}^-|I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^I0^J|\hat{g}|0^J1^J\rangle \langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle \langle J_{11}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{8} \sum_{I} \sum_{J} \langle 1^I0^J|\hat{g}|0^J1^J\rangle \langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle \langle J_{11}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} & + \frac{-1}{8} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{J}0^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \lambda_{A_{1},B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{J}0^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \lambda_{A_{1},B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{J}0^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 0^{J} | J^{V} \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 0^{N} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 1^{I}1^{J} | \hat{g} | 0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 1^{I}1^{J} | \hat{g} | 0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}1^{J} | \hat{g} | 0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}1^{J} | \hat{g} | 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}1^{J} | \hat{g} | 1^{J} \rangle \langle I_{10} | \hat{a}_{\alpha}^{-} | \hat{a}_{\alpha} \rangle \langle I_{10} | \hat{a}_{\alpha}^{-} | I_{0} \rangle \langle I_{11} | \hat{a}_{\alpha}^{+} | I_{0} \rangle t_{A_{1},B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{J}1^{J} | \hat{g} | 1^{J} \rangle \langle I_{10} | \hat{a}_{\alpha}^{-$$

$$\begin{split} & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{J}0^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 0^{J}1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{J} | \hat{g} | 0^{K}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{K} | \hat{g} | 1^{J}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 1^{I}1^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}1^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{A}1^{I} | \hat{g} | 0^{A}1^{J} \rangle \langle A_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10},J_{11}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{A}0^{A} | \hat{g} | 1^{I}1^{J} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^I|\hat{h}|1^J\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^I0^I|\hat{g}|1^I1^J\rangle\langle I_8|\hat{1}^+_{\alpha}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^I1^I|\hat{g}|1^I1^J\rangle\langle I_8|\hat{1}^+_{\alpha}\hat{1}^-_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{8}\sum_{I}\sum_{J}\langle 1^I0^J|\hat{g}|0^J1^J\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{8}\sum_{I}\sum_{J}\langle 1^I0^J|\hat{g}|1^J0^J\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^I0^J|\hat{g}|0^J1^J\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{0}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,B_1}t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{8}\sum_{I}\sum_{J}(1^{I}0^{J}|\hat{g}|1^{J}0^{J})\langle I_{8}|\hat{1}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle I_{A_{1},B_{1}}I_{I_{8},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{8}|\hat{1}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}|J_{0}\rangle I_{A_{1},B_{1}}I_{I_{8},J_{13}} \\ &+\frac{1}{8}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}|J_{0}\rangle\langle I_{18}|I_{8},I_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{8$$

$$\begin{split} & + \frac{1}{8} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 0^{J}1^{J} \rangle \langle I_{8} | \hat{1}_{\hat{\beta}} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle I_{14} I_{E_{1}} I_{I_{8},J_{13}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}0^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}0^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \sum_{J} \langle 1^{I}1^{J} | \hat{g} | 0^{K}0^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{A}1^{I} | \hat{g} | 0^{A}1^{J} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{A}1^{I} | \hat{g} | 0^{A}1^{J} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A}1^{I} | \hat{g} | 1^{A}1^{J} \rangle \langle A_{1} | \hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{A}0^{A} | \hat{g} | 1^{I}1^{J} \rangle \langle A_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{15},J_6)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^I |\hat{g}|0^J 0^J \rangle \langle I_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|I_0\rangle \langle J_6|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1} t_{I_{15},J_6} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^I |\hat{g}|1^J 1^J \rangle \langle I_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|I_0\rangle \langle J_6|\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1} t_{I_{15},J_6} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 1^I |\hat{g}|0^J 0^J \rangle \langle I_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|I_0\rangle \langle J_6|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1} t_{I_{15},J_6} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 1^I |\hat{g}|1^J 1^J \rangle \langle I_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|I_0\rangle \langle J_6|\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1} t_{I_{15},J_6} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^I |\hat{g}|0^J 0^J \rangle \langle I_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|I_0\rangle \langle J_6|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1} t_{B_1} t_{I_{15},J_6} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 1^I |\hat{g}|0^J 0^J \rangle \langle I_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|I_0\rangle \langle J_6|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1} t_{B_1} t_{I_{15},J_6} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 1^I |\hat{g}|0^J 0^J \rangle \langle I_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|I_0\rangle \langle J_6|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1} t_{B_1} t_{I_{15},J_6} \end{split}$$

$$+ \frac{1}{4} \sum_{I} \sum_{I} \langle 1^{I} 1^{I} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{15} | \hat{1}_{\alpha}^{+} \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{6} | \hat{1}_{\beta}^{-} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{15}, J_{6}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_1,J_1)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|0^I 0^J\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|0^I 0^J\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|0^I 0^J\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 1^J|\hat{g}|0^I 1^J\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 1^J|\hat{g}|0^I 1^J\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 1^J|\hat{g}|0^I 1^J\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 1^J|\hat{g}|0^I 1^J\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^I 0^J|\hat{g}|1^I 0^J\rangle\langle I_1|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^I 0^J|\hat{g}|1^I 0^J\rangle\langle I_1|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^I 1^J|\hat{g}|1^I 1^J\rangle\langle I_1|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^I|\hat{g}|0^J 0^J\rangle\langle I_1|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^I|\hat{g}|0^J 0^J\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^I|\hat{g}|0^J 0^J\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^I 1^I|\hat{g}|0^J 0^J\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_1,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^I 1^I|\hat{g}|0^J 0^J\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 1^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 1^{J} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{1} | \hat{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{n}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{n}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\beta}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{n}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\beta}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{n}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{n}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{n}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{n}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{n}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{1}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{n}^{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}I^{J}|\hat{g}|1^{I}I^{J}\rangle\langle I_{1}|\hat{\alpha}_{\alpha}^{+}\hat{\alpha}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{\alpha}_{\beta}^{+}\hat{\alpha}_{\beta}^{-}|J_{0}\rangle\langle L_{1}L_{B_{1}}t_{I_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}O^{I}|\hat{g}|0^{J}O^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}O^{I}|\hat{g}|0^{J}O^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}O^{I}|\hat{g}|1^{J}J^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}I^{I}|\hat{g}|0^{J}O^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}I^{I}|\hat{g}|0^{J}O^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}I^{I}|\hat{g}|0^{J}J^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}O^{J}|\hat{g}|0^{I}O^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}O^{J}|\hat{g}|0^{I}O^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1},I_{1}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}O^{J}|\hat{g}|0^{I}O^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}I^{I}[\hat{g}]0^{J}0^{J}\langle I_{1}|\hat{1}_{\hat{\sigma}}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}I^{I}[\hat{g}]0^{J}0^{J}\langle I_{1}|\hat{1}_{\hat{\sigma}}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}I^{I}[\hat{g}]1^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\hat{\sigma}}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}[\hat{g}]1^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}[\hat{g}]0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|I_{0}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\perp}\hat{0}_{\hat{\sigma}}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}[\hat{g}]0^{I}0^{J}\rangle\langle I_{1}|\hat{0}_{\hat{\sigma}}^{\hat$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{f}_{\beta} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{1}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | I_{0} \rangle \langle J_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{1}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1},J_{1}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1},I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1},B_{1},I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1},B_{1},I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1},B_{1},I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1},B_{1},I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1},I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1},I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1},B_{1},I_{1$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle I_{1} | I_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle I_{1} | I_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle I_{1} | I_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{R}^{+}\hat{1}_{R}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{1}|\hat{1}_{R}^{+}\hat{1}_{R}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{J}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle$$

$$\begin{split} & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{I} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{I} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{I} 1^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{I} 1^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{I} 1^{I} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 0^{I} 0^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_1,J_2)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 0^I 1^J \rangle \langle I_1 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 0^I 1^J \rangle \langle I_1 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle \langle J_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 0^I 1^J \rangle \langle I_1 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 0^I 1^J \rangle \langle I_1 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 0^I 1^J \rangle \langle I_1 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle \langle J_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 0^I 1^J \rangle \langle I_1 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_1 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_1 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_1 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_1 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_1 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_1 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_1 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_2} \\$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}I^{J}\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{o}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{1}_{\sigma}^{+}\hat{o}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}I^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{o}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{1}_{\sigma}^{+}\hat{o}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}I^{I}|\hat{g}|0^{J}I^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}I^{I}|\hat{g}|0^{J}I^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}I^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}I^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\sigma}|J_{0}\rangle t_{A_{1},B_{1}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}I^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\sigma}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}I^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\sigma}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}I^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}J\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}J\rangle \langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle \langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}J\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}J\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}J\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}J\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}J\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}J\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}J\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}J\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{J}J\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|0^{J}J\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}J\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle \langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{J}|\hat{g}|0^{J}J\rangle \langle I_{1}|$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I} I^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{G}_{\alpha} | I_{O} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{G}_{\alpha}^{-} | J_{O} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{I} | \hat{1}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | I_{O} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | J_{O} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{I} | \hat{I}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | I_{O} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{I}_{\beta}^{-} | J_{O} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{I} | \hat{I}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | I_{O} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{I}_{\beta}^{-} | J_{O} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{I} | \hat{1}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | I_{O} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{O} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{I} | \hat{1}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | I_{O} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{O} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{J} I^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{O} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{J} I^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{O} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{J} I^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{O} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{J} I^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{O} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}1^{J} | \hat{g} | 0^{J} I^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{I}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 1^{J} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{J}\langle I_{1}|\hat{0}_{\sigma}^{\dagger}\hat{o}_{\sigma}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{\dagger}\hat{0}_{\sigma}^{-}|J_{0}\rangle\langle L_{A_{1},B_{1}}I_{1}I_{2}I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{\dagger}\hat{1}_{\sigma}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{\dagger}\hat{1}_{\sigma}^{-}|J_{0}\rangle\langle L_{A_{1},B_{1}}I_{1}I_{2}I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{\dagger}\hat{1}_{\sigma}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{\dagger}\hat{1}_{\sigma}^{-}|J_{0}\rangle\langle L_{A_{1},B_{1}}I_{1}I_{2}I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{\dagger}\hat{1}_{\sigma}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\sigma}^{\dagger}\hat{0}_{\sigma}^{-}|J_{0}\rangle\langle L_{A_{1},B_{1}}I_{1}I_{2}I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{\dagger}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{\dagger}\hat{1}_{\sigma}^{-}|J_{0}\rangle\langle L_{A_{1},B_{1}}I_{1}I_{2}I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{\dagger}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{\dagger}\hat{1}_{\sigma}^{-}|J_{0}\rangle\langle L_{A_{1},B_{1}}I_{1}I_{2}I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{\dagger}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{\dagger}\hat{1}_{\sigma}^{-}|J_{0}\rangle\langle L_{A_{1},B_{1}}I_{1}I_{2}J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{\dagger}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{\dagger}\hat{1}_{\sigma}^{-}|J_{0}\rangle\langle L_{A_{1},A_{1}}I_{1}I_{2}J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{\dagger}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{\dagger}\hat{1}_{\sigma}^{-}|J_{0}\rangle\langle L_{A_{1},A_{1}}I_{1}J_{2}J_{2}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{\dagger}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{\dagger}\hat{1}_$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I}1^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{g} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{g} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I}1^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{g} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I}1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I}1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I}1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I}1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I}1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I}1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I}1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_1,J_3)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}|0^I 1^J \rangle \langle I_1|\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_3|\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}|0^I 1^J \rangle \langle I_1|\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle \langle J_3|\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}|0^I 1^J \rangle \langle I_1|\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_3|\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_1,J_3} \end{split}$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} (1^{I}0^{J} | \hat{g} | 1^{I}1^{J}) \langle I_{I} | \hat{1}_{\alpha}^{+} \hat{f}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{f}_{\beta} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{I} | \hat{1}_{\alpha}^{+} \hat{f}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{I} | \hat{1}_{\alpha}^{+} \hat{f}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{I} | \hat{g} | 0^{J}1^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{I} | \hat{g} | 0^{J}1^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{I} | \hat{g} | 0^{J}1^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{I} | \hat{g} | 0^{J}1^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{I} | \hat{g} | 0^{J}1^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{I} | \hat{g} | 0^{J}1^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I}1^{I} | \hat{g} | 0^{J}1^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 0^{I}1^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},I_{1}} t_{B_{1},J_{3}} \\ & + \frac{1}{4} \sum_{J} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{I} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta} | I_{0$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{J}\langle I_{1}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\beta}\hat{1}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}^{\pm}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}^{\pm}_{\beta}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}^{\pm}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}^{\pm}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}^{\pm}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}^{\pm}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}^{\pm}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{1}^{-}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}^{\pm}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}^{\pm}_{\alpha}\hat{1}^$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}[\hat{g}]0^{J}1^{J}\langle I_{1}|\hat{1}_{\sigma}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}[\hat{g}]0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{+}\hat{1}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}]0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}]0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\sigma}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\sigma}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\sigma}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{g} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{n}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{n}^{\perp}\hat{0}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{n}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{n}^{\perp}\hat{0}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{n}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{n}^{\perp}\hat{0}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{n}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{n}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{n}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{n}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{n}^{\perp}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{n}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{n}^{\perp}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{\perp}\hat{1}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\sigma}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\sigma}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\sigma}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{0}_{\sigma}^{+}\hat{0}_{\sigma}^{-}|I_{0$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_1)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I0^J|\hat{g}|1^I0^J\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I0^J|\hat{g}|1^I0^J\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I0^J|\hat{g}|1^I0^J\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I0^J|\hat{g}|1^I0^J\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I0^J|\hat{g}|1^I0^J\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I0^J|\hat{g}|1^I0^J\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|1^I1^J\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|0^J0^J\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|0^J0^J\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|1^J1^J\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_2,J_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I1^J|\hat{g}|1^J1^J\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_1|\hat{0}_{\alpha}^{+}\hat{0}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{g}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{g}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{g}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}1|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|I^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{a}_{\alpha}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|I^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{a}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|I^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|I^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|I^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{0}_{R}^{-}|I_{0}$$

$$\begin{split} & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{I} [\hat{g}] 0^{J} 0^{J} \langle I_{2} [\hat{0}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | I_{0} \rangle \langle J_{1} [\hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{I} [\hat{g}] 0^{J} 0^{J} \rangle \langle I_{2} [\hat{0}^{+}_{\beta} \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{1} [\hat{0}^{+}_{\alpha} \hat{0}^{-}_{\beta} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{I} [\hat{g}] I^{J} I^{J} \rangle \langle I_{2} [\hat{0}^{+}_{\beta} \hat{1}^{-}_{\alpha} | I_{0} \rangle \langle J_{1} [\hat{1}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{I} [\hat{g}] I^{J} I^{J} \rangle \langle I_{2} [\hat{0}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | I_{0} \rangle \langle J_{1} [\hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{I} [\hat{g}] I^{J} I^{J} \rangle \langle I_{2} [\hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{1} [\hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{I} [\hat{g}] I^{J} I^{J} \rangle \langle I_{2} [\hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{1} [\hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{J} [\hat{g}] I^{J} I^{J} \rangle \langle I_{2} [\hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{1} [\hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{1}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{J} [\hat{g}] I^{J} I^{J} \rangle \langle I_{2} [\hat{0}^{+}_{\beta} \hat{a}^{-}_{\beta} | I_{0} \rangle \langle J_{1} [\hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{J} [\hat{g}] I^{J} I^{J} \rangle \langle I_{2} [\hat{0}^{+}_{\beta} \hat{a}^{-}_{\beta} | I_{0} \rangle \langle J_{1} [\hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{J} [\hat{g}] I^{J} I^{J} \rangle \langle I_{2} [\hat{0}^{+}_{\beta} \hat{a}^{-}_{\beta} | I_{0} \rangle \langle J_{1} [\hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} I^{J} [\hat{g}] I^{J} I^{J} \rangle \langle I_{2} [\hat{0}^{+}_{\beta} \hat{a}^{-}_{\beta} | I_{0} \rangle \langle J_{1} [\hat{0}^{+}_{\beta} \hat{0}^{-}_{\beta} | J_{0} \rangle t_{A_{1$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle L_{A_{1},B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle L_{A_{1},B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\langle L_{B_{1},L_{A_{1},I_{2}}t_{J_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle L_{B_{1},L_{A_{1},I_{2}}t_{J_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle L_{B_{1},L_{A_{1},I_{2}}t_{J_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle L_{B_{1},L_{A_{1},I_{2}}t_{J_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle\langle L_{B_{1},L_{A_{1},I_{2}}t_{J_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle L_{B_{1},L_{A_{1},I_{2}}t_{J_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle L_{B_{1},L_{A_{1},I_{2}}t_{J_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle L_{B_{1},L_{A_{1},I_{2}}t_{J_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_1)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 0^J \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 0^J \rangle \langle I_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 0^J \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^J |\hat{g}| 1^I 1^J \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^J |\hat{g}| 1^I 1^J \rangle \langle I_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_1| \hat{1}_{\beta}^+ \hat{1}_{\beta}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 0^J \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 0^J \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 0^J \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 0^J \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 0^J \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 0^J \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^J |\hat{g}| 1^I 1^J \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 1^J |\hat{g}| 1^I 1^J \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_1| \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0 \rangle t_{A_1,B_1} t_{I_3,J_1} \\ &+ \frac{1}{4} \sum_{J} \sum_{J} \langle 0^I 1^J |\hat{g}| 1^J 1^J \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{1}_{\rho}^{+} \hat{\sigma}_{\rho} | I_{0} \rangle \langle J_{1} | \hat{1}_{\rho}^{+} \hat{1}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{1}_{\rho}^{+} \hat{\sigma}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{1}_{\rho}^{+} \hat{1}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{3} | \hat{0}_{\rho}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{1} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{3} | \hat{0}_{\rho}^{+} \hat{1}_{\rho} | I_{0} \rangle \langle J_{1} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{3} | \hat{0}_{\rho}^{+} \hat{1}_{\rho} | I_{0} \rangle \langle J_{1} | \hat{1}_{\rho}^{+} \hat{\sigma}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{3} | \hat{0}_{\rho}^{+} \hat{1}_{\rho} | I_{0} \rangle \langle J_{1} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{3} | \hat{1}_{\rho}^{+} \hat{\sigma}_{\rho} | I_{0} \rangle \langle J_{1} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle I_{3} | \hat{1}_{\rho}^{+} \hat{\sigma}_{\rho} | I_{0} \rangle \langle J_{1} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{3} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | I_{0} \rangle \langle J_{1} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{3} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | I_{0} \rangle \langle J_{1} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{3} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | I_{0} \rangle \langle J_{1} | \hat{0}_{\rho}^{+} \hat{\sigma}_{\rho} | J_{0} \rangle t_{A_{1},B_{1}} t_{B_{1},J_{1}} \\ & + \frac{1}{4} \sum_{J} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{J} \rangle \langle I_{3} | \hat{$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}[\hat{g}]I^{J}I^{J}\langle I_{3}]\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}[\hat{g}]0^{J}0^{J}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}[\hat{g}]0^{J}0^{J}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}[\hat{g}]1^{J}I^{J}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\alpha}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]I^{I}0^{J}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]I^{I}0^{J}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]I^{I}0^{J}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]I^{J}0^{J}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}[\hat{g}]I^{J}0^{J}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] I^{I} 0^{J} \rangle \langle I_{3} [\hat{0}_{\beta}^{+} \hat{a}_{\beta}^{-}] I_{0} \rangle \langle J_{1} [\hat{0}_{\alpha}^{+} \hat{o}_{\alpha}^{-}] J_{0} \rangle t_{A_{1},J_{1}} t_{B_{1},I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] I^{I} 0^{J} \rangle \langle I_{3} [\hat{1}_{\beta}^{+} \hat{o}_{\beta}^{-}] I_{0} \rangle \langle J_{1} [\hat{0}_{\alpha}^{+} \hat{o}_{\alpha}^{-}] J_{0} \rangle t_{A_{1},J_{1}} t_{B_{1},I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{J} [\hat{g}] I^{I} 1^{J} \rangle \langle I_{3} [\hat{0}_{\beta}^{+} \hat{a}_{\beta}^{-}] I_{0} \rangle \langle J_{1} [\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] J_{0} \rangle t_{A_{1},J_{1}} t_{B_{1},I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] I^{I} 0^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{a}_{\alpha}^{-}] I_{0} \rangle \langle J_{1} [\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] J_{0} \rangle t_{A_{1},J_{1}} t_{B_{1},I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] I^{I} 0^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{a}_{\alpha}^{-}] I_{0} \rangle \langle J_{1} [\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] I^{I} 0^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{a}_{\alpha}^{-}] I_{0} \rangle \langle J_{1} [\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-}] J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] I^{I} 0^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{a}_{\alpha}^{-}] I_{0} \rangle \langle J_{1} [\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-}] J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] I^{I} 0^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{a}_{\alpha}^{-}] I_{0} \rangle \langle J_{1} [\hat{0}_{\beta}^{+} \hat{a}_{\beta}^{-}] J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] I^{I} 0^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{a}_{\alpha}^{-}] I_{0} \rangle \langle J_{1} [\hat{0}_{\beta}^{+} \hat{a}_{\beta}^{-}] J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] I^{I} 0^{J} \rangle \langle I_{3} [\hat{a}_{\alpha}^{+} \hat{a}_{\alpha}^{-}] I_{0} \rangle \langle J_{1} [\hat{0}_{\beta}^{+} \hat{a}_{\beta}^{-}] J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] I^{J} 0^{J} \rangle \langle I_{3} [\hat{a}_{\alpha}^{+} \hat{a}_{\alpha}^{-}] I_{0} \rangle \langle J_{1} [\hat{a}_{\beta}^{+} \hat{a}_{\beta}^{-}] J_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3},J_{1}} \\ & + \frac{1}{4} \sum_{I} \sum_{J}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{o}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{o}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{o}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{o}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{o}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{o}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{o}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{o}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{\alpha}_{\alpha}^{+}\hat{\alpha}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{\alpha}_{\beta}^{+}\hat{\alpha}_{\alpha}^{-}|J_{0}\rangle\langle I_{1}|\hat{\alpha}_{\beta}^{+}\hat{\alpha}_{\beta}^{-}|J_{0}\rangle\langle I_{1}|\hat{\alpha}_{\alpha}^{+}\hat{\alpha}_{\alpha}^{-}|J_{0}\rangle\langle I_{1}|\hat{\alpha}_{\alpha}^{+}\hat{\alpha}_{\alpha}^{-}|J_{0}\rangle\langle I_{1}|\hat{\alpha}_{\beta}^{+}\hat{\alpha}_{\alpha}^{-}|J_{0}\rangle\langle I_{1}|\hat{\alpha}_{\alpha}^{+}\hat{\alpha}_{\alpha}^{-}|J_{0}\rangle\langle I_{1}|\hat$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{2}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{2}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{2}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}I^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{2}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{2}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{2}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{I}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{2}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{I}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{2}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{I}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{I}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{2}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|I$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{3}|\hat{\alpha}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|I^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|I^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{1}}\\ &+\frac{1}{4}\sum$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_2)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{0}_{h}^{+}\hat{1}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{1}_{\alpha}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{0}_{h}^{+}\hat{1}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{1}_{\beta}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{0}_{h}^{+}\hat{1}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{1}_{\beta}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{0}_{h}^{+}\hat{1}_{\alpha}|I_0\rangle\langle J_2|\hat{1}_{h}^{+}\hat{0}_{\alpha}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{0}_{h}^{+}\hat{1}_{\alpha}|I_0\rangle\langle J_2|\hat{1}_{h}^{+}\hat{0}_{\beta}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{0}_{h}^{+}\hat{1}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{1}_{\alpha}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{1}_{h}^{+}\hat{0}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{1}_{\alpha}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{1}_{h}^{+}\hat{0}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{1}_{\beta}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{1}_{h}^{+}\hat{0}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{1}_{\beta}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{1}_{h}^{+}\hat{0}_{\alpha}|I_0\rangle\langle J_2|\hat{1}_{h}^{+}\hat{0}_{\alpha}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{1}_{h}^{+}\hat{0}_{\alpha}|I_0\rangle\langle J_2|\hat{1}_{h}^{+}\hat{0}_{\alpha}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_2|\hat{0}_{h}^{+}\hat{0}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{1}_{\alpha}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^J 0^J\rangle\langle I_2|\hat{0}_{h}^{+}\hat{0}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{0}_{\alpha}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_2|\hat{0}_{h}^{+}\hat{0}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{0}_{\alpha}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_2|\hat{0}_{h}^{+}\hat{0}_{\alpha}|I_0\rangle\langle J_2|\hat{0}_{h}^{+}\hat{0}_{\alpha}|J_0\rangle\langle L_{A_1,B_1}t_{I_2,J_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 1^J|\hat{g}|1^$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|J_$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{J} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{J} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},J_{2}} t_{B_{1},I_{2}} \\ & + \frac{1}{4} \sum_{J} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{2} | \hat{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{I} | \hat{g} | 0^{J} I^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1}} t_{I_{2},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{I} | \hat{g} | 0^{J} I^{J} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{0}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1}} t_{I_{2},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{I} | \hat{g} | 0^{J} I^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1}} t_{I_{2},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{I} | \hat{g} | 0^{J} I^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1}} t_{I_{2},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{I} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1}} t_{I_{2},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{J} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1}} t_{I_{2},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{J} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1}} t_{I_{2},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{J} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1}} t_{I_{2},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{J} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1}} t_{I_{2},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{J} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1},I_{2}} t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{J} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle k_{A_{1}} t_{B_{1},I_{2}} t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{J} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle 1_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle 1_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle 1_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}1|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}1|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}1|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{R}^{-}|I_{0}\rangle$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{2}|\hat{1}_{\alpha}^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_3)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0\rangle \langle J_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_2,J_3} \\$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\langle 2_{I}|\hat{1}_{B}^{+}\hat{\sigma}_{B}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{1}_{B}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{B}^{+}\hat{\sigma}_{G}|I_{0}\rangle\langle J_{3}|\hat{1}_{B}^{+}\hat{\sigma}_{G}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{B}^{+}\hat{\sigma}_{B}|I_{0}\rangle\langle J_{3}|\hat{0}_{A}^{+}\hat{\sigma}_{G}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{B}^{+}\hat{\sigma}_{B}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{\sigma}_{B}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{B}^{+}\hat{\sigma}_{B}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{\sigma}_{B}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{B}^{+}\hat{\sigma}_{B}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{\sigma}_{B}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{B}^{+$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{+}^{\hat{\alpha}}\hat{f}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{\hat{\alpha}}\hat{\alpha}_{\alpha}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{+}^{\hat{\alpha}}\hat{f}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{\hat{\alpha}}\hat{\alpha}_{\alpha}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{+}^{\hat{\alpha}}\hat{f}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{+}^{\hat{\alpha}}\hat{f}_{\alpha}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{+}^{\hat{\alpha}}\hat{f}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{+}^{\hat{\alpha}}\hat{f}_{\beta}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{+}^{\hat{\alpha}}\hat{\sigma}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{+}^{\hat{\alpha}}\hat{f}_{\beta}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{+}^{\hat{\alpha}}\hat{\sigma}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{+}^{\hat{\alpha}}\hat{\sigma}_{\beta}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{+}^{\hat{\alpha}}\hat{\sigma}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{+}^{\hat{\alpha}}\hat{\sigma}_{\beta}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{1},I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{+}^{\hat{\alpha}}\hat{\sigma}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{+}^{\hat{\alpha}}\hat{\sigma}_{\beta}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{2},J_{3}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{2},J_{3}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{2},J_{3}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{2},J_{3}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{2},J_{3}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{2},J_{3}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{2},J_{3}}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{2},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{2},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle L_{A_{1}}t_{B_{1}}t_{I_{2},J_{3}} \\ &+\frac{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{n}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{n}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{n}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{n}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{n}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{n}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1},J_{3}}t_{I_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},B_{1}}t_{I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},B_{1}}t_{I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{2}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{2}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{2}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{2}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{2}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{2}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{2}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{2}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{2}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{2}\hat{1}_{\alpha}^{-}|I_{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{G}|I_{0}\rangle\langle J_{3}|\hat{1}_{R}^{+}\hat{0}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{3}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{2}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{R}^{+}\hat{1}_{B}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{2}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{R}^{+}\hat{1}_{B}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{R}^{+}\hat{0}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{R}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{R}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle I_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_2)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |J_0\rangle t_{A_1,B_1} t_{I_3,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0\rangle \langle J_2| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_3,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_3,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |J_0\rangle t_{A_1,B_1} t_{I_3,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0\rangle \langle J_2| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_3,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^I 0^J |\hat{g}| 1^I 1^J \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_2| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_3,J_2} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} J^{J} \rangle \langle J_{3} | \hat{h}_{\alpha}^{+} \hat{G}_{\alpha} | J_{0} \rangle \langle J_{2} | \hat{h}_{\alpha}^{+} \hat{G}_{\beta} | J_{0} \rangle t_{A_{1}, J_{3}} t_{B_{1}, J_{2}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha} | J_{0} \rangle t_{A_{1}, J_{3}} t_{B_{1}, J_{2}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha} | J_{0} \rangle t_{A_{1}, J_{3}} t_{B_{1}, J_{2}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha} | J_{0} \rangle t_{A_{1}, I_{3}} t_{B_{1}, J_{2}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{G}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha} | J_{0} \rangle t_{A_{1}, I_{3}} t_{B_{1}, J_{2}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{G}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha} | J_{0} \rangle t_{A_{1}, I_{3}} t_{B_{1}, J_{2}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{G}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha} | J_{0} \rangle t_{A_{1}, I_{3}} t_{B_{1}, J_{2}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{G}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}, I_{3}} t_{B_{1}, J_{2}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{3} | \hat{I}_{\alpha}^{+} \hat{G}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}, I_{3}} t_{B_{1}, J_{2}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}, I_{3}} t_{B_{1}, J_{3}} \\ & + \frac{1}{4} \sum_{J} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{I}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}, J_{2}} t_{B_{1}, I_{3}} \\ & + \frac{1}{4} \sum_{J}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}I^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{2}}t_{B_{1},I_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}I^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle L_{A_{1},J_{2}}t_{B_{1},I_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{2}}t_{B_{1},I_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{2}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{2}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{2}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{2}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{2}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle L_{A_{1}}t_{B_{1}}t_{I_{3},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{h}_{\beta}^{+}\hat{g}|I_{0}\rangle\langle J_{2}|\hat{h}_{\alpha}^{+}\hat{h}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{h}_{\beta}^{+}\hat{g}|I_{0}\rangle\langle J_{2}|\hat{h}_{\alpha}^{+}\hat{h}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{h}_{\beta}^{+}\hat{g}|I_{0}\rangle\langle J_{2}|\hat{h}_{\alpha}^{+}\hat{h}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{h}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{h}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{h}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{h}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{h}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{h}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{h}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{h}_{\alpha}^{+}\hat{b}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{h}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{h}_{\alpha}^{+}\hat{b}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{h}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{h}_{\alpha}^{+}$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{1}_{\sigma}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{1}_{\sigma}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{1}_{\sigma}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{1}_{\sigma}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\sigma}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{1}_{\sigma}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\sigma}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 1^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1},J_{2}} t_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\sigma}^{+} \hat{1}_{\alpha}^{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{g}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{o}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{o}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{o}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{o}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{o}_{\beta}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{A_{1}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{A_{1}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},B_{1}}t_{A_{1}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}I^{J}\rangle\langle I_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|0^{J}I^{J}\rangle\langle I_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{1}_{\sigma}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\sigma}^{+}\hat{I}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\sigma}^{+}\hat{I}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\sigma}^{+}\hat{I}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\sigma}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}I^{J}|\hat{g}|1^{J}I^{J}\rangle\langle I_{3}|\hat{0}_{\sigma}^{+}\hat{I}_{\alpha}^$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{I} | \hat{g} | 0^{J} I^{J} \rangle \langle I_{3} | \hat{1}_{\sigma}^{2} \hat{G}_{\sigma} | I_{O} \rangle \langle J_{2} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | J_{O} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I} I^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{3} | \hat{1}_{\sigma}^{2} \hat{G}_{\sigma} | I_{O} \rangle \langle J_{2} | \hat{1}_{\sigma}^{2} \hat{G}_{\sigma}^{2} | J_{O} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{3} | \hat{1}_{\sigma}^{2} \hat{G}_{\sigma}^{2} | I_{O} \rangle \langle J_{2} | \hat{1}_{\sigma}^{2} \hat{G}_{\sigma}^{2} | J_{O} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | I_{O} \rangle \langle J_{2} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | J_{O} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | I_{O} \rangle \langle J_{2} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | J_{O} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | I_{O} \rangle \langle J_{2} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | J_{O} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | I_{O} \rangle \langle J_{2} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | J_{O} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | I_{O} \rangle \langle J_{2} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | J_{O} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}} t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | I_{O} \rangle \langle J_{2} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | J_{O} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}} t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} I^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | I_{O} \rangle \langle J_{2} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | J_{O} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}} t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{J} I^{J} \rangle \langle I_{3} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | I_{O} \rangle \langle J_{2} | \hat{0}_{\sigma}^{2} \hat{1}_{\sigma}^{2} | J_{O} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_3)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^J|\hat{g}|1^I 1^J\rangle\langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 0^I|\hat{g}|1^I 1^J\rangle\langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_3,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}1|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{1},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}1|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle L_{A_{1},J_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{B}^{+}\hat{0}_{B}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{B}^{+}\hat{0}_{B}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{B}^{+}\hat{0}_{A}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{B}^{+}\hat{0}_{B}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{1}_{A}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{1}_{B}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{1}_{B}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{1}_{B}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{1}_{B}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{0}_{B}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{1}_{B}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{0}_{B}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{0}_{B}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{0}_{A}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{0}_{B}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{0}_{A}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{0}_{B}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{0}_{A}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{0}_{B}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{0}_{A}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{0}_{B}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{0}_{A}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}},J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{0}_{B}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{B}^{+}\hat{0}_{B}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}},I_{3}t_{3},J_{3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{B}^{+}\hat{0}_$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{I} I^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{J_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{I} 1^{J} \rangle \langle I_{3} [\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-}] I_{0} \rangle \langle J_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] J_{0} \rangle k_{A_{1}} k_{B_{1},J_{3}} k_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{I} 1^{J} \rangle \langle I_{3} [\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-}] I_{0} \rangle \langle J_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] J_{0} \rangle k_{A_{1}} k_{B_{1},J_{3}} k_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{I} 1^{J} \rangle \langle I_{3} [\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-}] I_{0} \rangle \langle J_{3} [\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] J_{0} \rangle k_{A_{1}} k_{B_{1},J_{3}} k_{I_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{I} 1^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] I_{0} \rangle \langle J_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] J_{0} \rangle k_{A_{1},B_{1}} k_{I_{3}} k_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{I} 1^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] I_{0} \rangle \langle J_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] J_{0} \rangle k_{A_{1},B_{1}} k_{I_{3}} k_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{I} 1^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] I_{0} \rangle \langle J_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] J_{0} \rangle k_{A_{1},B_{1}} k_{I_{3}} k_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{I} 1^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] I_{0} \rangle \langle J_{3} [\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] J_{0} \rangle k_{A_{1},B_{1}} k_{I_{3}} k_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{I} 1^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] I_{0} \rangle \langle J_{3} [\hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{-}] J_{0} \rangle k_{A_{1},B_{1}} k_{I_{3}} k_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{I} 1^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] I_{0} \rangle \langle J_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] J_{0} \rangle k_{A_{1},B_{1}} k_{I_{3}} k_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{J} 1^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] I_{0} \rangle \langle J_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] J_{0} \rangle k_{A_{1},B_{1}} k_{I_{3}} k_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I} 0^{J} [\hat{g}] 1^{J} 1^{J} \rangle \langle I_{3} [\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-}] I_{0} \rangle \langle J_{3} [\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-}] J_{0} \rangle k_{A_{1},B_{1}} k_{I_{3}} k_{J_{3}} \\ & + \frac{1$$

$$\begin{split} & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\beta} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{J}1^{J} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{J}1^{J} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | J_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{3}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{I}0^{J} | \hat{g} | 1^{J}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle I_{3}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_4,J_5)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|1^J 0^J\rangle\langle I_4|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_5|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_4,J_5} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_4|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_5|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_4,J_5} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_4|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_5|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_4,J_5} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|1^J 0^J\rangle\langle I_4|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_5|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_1}t_{I_4,J_5} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|1^J 0^J\rangle\langle I_4|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_5|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_1}t_{I_4,J_5} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_4|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_5|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_1}t_{I_4,J_5} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_4|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_5|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_1}t_{I_4,J_5} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_4|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_5|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_1}t_{I_4,J_5} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^I 1^I|\hat{g}|0^J 1^J\rangle\langle I_4|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_5|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_1}t_{I_4,J_5} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_5,J_4)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I |\hat{g}| 1^J 0^J \rangle \langle I_5 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_4 |\hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_5,J_4} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^I 1^I |\hat{g}| 0^J 1^J \rangle \langle I_5 |\hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_4 |\hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} |J_0\rangle t_{A_1,B_1} t_{I_5,J_4} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{5}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{4}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{5},J_{4}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{5}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{4}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{5},J_{4}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{5}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{4}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{5},J_{4}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{5}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{4}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{5},J_{4}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle I_{5}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{4}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{5},J_{4}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle I_{5}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{4}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{5},J_{4}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{6},J_{15})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{6}|\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{6}|\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle I_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle I_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{6},J_{15}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{I}1^{I}|\hat{g}|1^{J}1^{J}1^{J}\langle I_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{15}|\hat{0}_{\beta}^{-}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle I_{15}|\hat{0}_{\beta}^{-}\hat{0}_{\beta}^{-}|I_{15$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A |\hat{h}|0^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1 \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 1^A |\hat{g}|1^A 0^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 1^A |\hat{g}|0^I 1^A \rangle \langle A_{12}|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 1^A |\hat{g}|0^I 1^A \rangle \langle A_{12}|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}|0^I 1^A \rangle \langle A_{12}|\hat{0}_{\alpha}^+ \hat{1}_{\beta}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 1^A |\hat{g}|1^A 0^I \rangle \langle A_{12}|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}|1^A 0^I \rangle \langle A_{12}|\hat{1}_{\alpha}^+ \hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 0^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1 \rangle \langle I_9|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- \hat{0}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 0^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1 \rangle \langle I_9|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- \hat{1}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 1^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1 \rangle \langle I_9|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- \hat{1}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 1^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1 \rangle \langle I_9|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- \hat{1}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 1^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1 \rangle \langle I_9|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- \hat{1}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 1^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1 \rangle \langle I_9|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- \hat{1}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 1^I 1^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1 \rangle \langle I_9|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- \hat{1}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 1^I 1^I \rangle \langle A_{$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{B}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_7)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A |\hat{h}|0^I \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 1^A |\hat{g}|1^A 0^I \rangle \langle A_{14}|\hat{0}^+_{\beta} \hat{1}^+_{\beta} \hat{1}^-_{\beta} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 1^A |\hat{g}|0^I 1^A \rangle \langle A_{14}|\hat{1}^+_{\beta} \hat{0}^+_{\beta} \hat{1}^-_{\beta} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}|0^I 1^A \rangle \langle A_{14}|\hat{1}^+_{\alpha} \hat{0}^+_{\beta} \hat{1}^-_{\alpha} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}|0^I 1^A \rangle \langle A_{14}|\hat{1}^+_{\alpha} \hat{0}^+_{\beta} \hat{1}^-_{\alpha} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 1^A |\hat{g}|0^I 1^A \rangle \langle A_{14}|\hat{0}^+_{\beta} \hat{1}^+_{\beta} \hat{1}^-_{\alpha} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 1^A |\hat{g}|0^I 1^A \rangle \langle A_{14}|\hat{0}^+_{\beta} \hat{1}^+_{\beta} \hat{1}^-_{\alpha} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 1^A |\hat{g}|0^I 1^A \rangle \langle A_{14}|\hat{0}^+_{\beta} \hat{1}^+_{\beta} \hat{1}^-_{\alpha} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 0^I \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1 \rangle \langle I_7|\hat{0}^+_{\alpha} \hat{0}^-_{\beta} \hat{0}^-_{\alpha} |I_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle \langle J_0|\hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^I 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle \langle J_0|\hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle \langle J_0|\hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle \langle J_0|\hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle \langle J_0|\hat{0}^+_{\beta} \hat{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{B}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{B}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{14},I_{14},I_{14}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}|A_{14}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}|A_{14}\rangle\langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^A|\hat{h}|1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{4}\sum_{I}\langle 0^A1^A|\hat{g}|1^A1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{-1}{4}\sum_{I}\langle 0^A1^A|\hat{g}|1^I1^A\rangle\langle A_{12}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{4}\sum_{I}\langle 0^A1^A|\hat{g}|1^I1^A\rangle\langle A_{12}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{4}\sum_{I}\langle 0^A1^A|\hat{g}|1^I1^A\rangle\langle A_{12}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|1^I1^A\rangle\langle A_{12}|\hat{0}_{\alpha}^+\hat{1}_{\beta}^+\hat{1}_{\beta}^-|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|1^A1^I\rangle\langle A_{12}|\hat{1}_{\alpha}^+\hat{1}_{\beta}^+\hat{1}_{\alpha}^-|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|1^A1^I\rangle\langle A_{12}|\hat{1}_{\alpha}^+\hat{1}_{\beta}^+\hat{1}_{\beta}^-|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^I1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\beta}^+\hat{1}_{\beta}^-\hat{1}_{\alpha}^-|I_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^I1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^A1^J|\hat{g}|1^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^J0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^J|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_10|\hat{1}_{\alpha}^-|I_0\rangle\langle J_0|\hat{1}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^A|\hat{h}|1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{-1}{4}\sum_{I}\langle 0^A|A^|\hat{g}|1^A^{1I}\rangle\langle A_{14}|\hat{0}^+_{\beta}|\hat{I}^+_{\beta}|\hat{I}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{-1}{4}\sum_{I}\langle 0^A^1A^|\hat{g}|1^I^A^A\rangle\langle A_{14}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}|\hat{I}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{-1}{4}\sum_{I}\langle 0^A^1A^|\hat{g}|1^I^A^A\rangle\langle A_{14}|\hat{1}^+_{\alpha}\hat{0}^+_{\beta}|\hat{I}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{-1}{2}\sum_{I}\langle 0^A^1A^|\hat{g}|1^A^I^I\rangle\langle A_{14}|\hat{1}^+_{\alpha}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{4}\sum_{I}\langle 0^A^1A^|\hat{g}|1^A^I^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|\hat{1}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{4}\sum_{I}\langle 0^A^1A^|\hat{g}|1^A^I^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{4}\sum_{I}\langle 0^A^1A^|\hat{g}|1^A^I^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A^1I^|\hat{g}|0^I^I^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^+_{\alpha}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^+_{\beta}|I_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A^1I^|\hat{g}|0^I^I^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^A^1I^|\hat{g}|0^I^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^A^0I^1|\hat{g}|1^I^0J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^A^0I^1|\hat{g}|1^I^0J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A^0I^0|\hat{g}|1^I^0J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A^0I^0|\hat{g}|1^I^0J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_1|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A^0I^$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_9)\rangle =$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{A}|\hat{h}|0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}} \\ &+\frac{-1}{4}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{A}0^{J}\rangle\langle A_{11}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}} \\ &+\frac{-1}{4}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{A}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{A}0^{J}\rangle\langle A_{11}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}} \\ &+\frac{1}{4}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{A}0^{J}\rangle\langle A_{11}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}} \\ &+\frac{1}{4}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{A}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}} \\ &+\frac{1}{4}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{A}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{A}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{J}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{+}|\hat{I}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{9}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{9}\rangle\langle I_{11},I_{19} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{9}\rangle\langle I_{11},I_{19} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{9}\rangle\langle I_{11},I_{19} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{9}\rangle\langle I_{11},I_{19} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{J}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{9}\rangle\langle I_{11},I_{19} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{J}|\hat{g}|0^{J}0^{J}\rangle\langle A_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A|\hat{h}|0^I\rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^A|\hat{g}|1^A 0^I\rangle \langle A_{13}|\hat{0}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_7} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 1^A|\hat{g}|0^A 0^I\rangle \langle A_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A|\hat{g}|0^A 0^I\rangle \langle A_{13}|\hat{0}^+_{\alpha}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_7} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 0^A|\hat{g}|1^A 0^I\rangle \langle A_{13}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_7} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{A}0^{I}\rangle\langle A_{13}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}} \\ &+\frac{1}{4}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{A}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}} \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}} \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{10})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}|\hat{h}|1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^{A}1^{A}|\hat{g}|0^{A}1^{I}\rangle\langle A_{11}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^{A}0^{A}|\hat{g}|1^{A}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{A}|\hat{g}|1^{A}1^{I}\rangle\langle A_{11}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^{A}0^{A}|\hat{g}|1^{A}1^{I}\rangle\langle A_{11}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^{A}1^{A}|\hat{g}|0^{A}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^{A}1^{A}|\hat{g}|0^{A}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{A}|\hat{g}|0^{A}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{I}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 1^{A}1^{I}|\hat{g}|1^{I}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 1^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}} \end{split}$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|A_{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A|\hat{h}|I^I\rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^A|\hat{g}|1^A I^I\rangle \langle A_{13}|\hat{0}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 1^A|\hat{g}|0^A 1^I\rangle \langle A_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A|\hat{g}|0^A 1^I\rangle \langle A_{13}|\hat{0}^+_{\alpha}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 0^A|\hat{g}|1^A 1^I\rangle \langle A_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 0^A|\hat{g}|1^A 1^I\rangle \langle A_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 0^A|\hat{g}|1^A 1^I\rangle \langle A_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 1^A|\hat{g}|0^A 1^I\rangle \langle A_{13}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I|\hat{g}|0^I 1^I\rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^+_{\alpha}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|I_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^I|\hat{g}|1^I 1^I\rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{-1}{2} \sum_{I} \sum_{J} \langle 1^A 1^I|\hat{g}|0^J 0^J\rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^A 0^J|\hat{g}|1^I 0^J\rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^A 0^J|\hat{g}|1^I 0^J\rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^A 0^J|\hat{g}|1^I 1^J\rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^A 0^J|\hat{g}|1^I 1^J\rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{12})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A |\hat{h}|0^I \rangle \langle A_9 |\hat{0}_\alpha|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+|I_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^A 0^I \rangle \langle A_9 |\hat{0}_\beta^+ \hat{0}_\beta^- \hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+|I_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}|1^A 0^I \rangle \langle A_9 |\hat{0}_\beta^+ \hat{0}_\beta^- \hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+|I_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 1^I |\hat{g}|0^I 1^I \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+ \hat{1}_\alpha^+ \hat{1}_\alpha^-|I_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 1^I |\hat{g}|0^I 1^I \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+ \hat{1}_\beta^+ \hat{1}_\beta^-|I_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 1^I \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+ \hat{1}_\beta^+ \hat{1}_\beta^-|I_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 1^I \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{1}_\alpha^+ \hat{0}_\alpha^+ \hat{1}_\alpha^-|I_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 1^I \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{1}_\alpha^+ \hat{0}_\alpha^+ \hat{1}_\alpha^-|I_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^I \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+ \hat{1}_\alpha^+ \hat{I}_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^I \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+ \hat{I}_0 \rangle \langle J_0|\hat{0}_\alpha^+ \hat{0}_\alpha^-|J_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 0^J \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+|I_0 \rangle \langle J_0|\hat{0}_\alpha^+ \hat{0}_\alpha^-|J_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^J \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+|I_0 \rangle \langle J_0|\hat{0}_\alpha^+ \hat{0}_\alpha^-|J_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^A 1^J |\hat{g}|0^I 1^J \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+|I_0 \rangle \langle J_0|\hat{0}_\alpha^+ \hat{0}_\alpha^-|J_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^J |\hat{g}|0^I 1^J \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{12}|\hat{0}_\alpha^+|I_0 \rangle \langle J_0|\hat{0}_\beta^+ \hat{0}_\beta^-|J_0 \rangle t_{B_1} t_{A_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_9 |\hat{0}_\alpha^-|A_1 \rangle \langle B_1|\hat{0}_\alpha^+ \hat{0}_\alpha^-|B_1$$

$$+ \tfrac{-1}{2} \sum_I \langle 0^A 1^B | \hat{g} | 0^I 1^B \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle B_1 | \hat{1}_\beta^+ \hat{1}_\beta^- | B_1 \rangle \langle I_{12} | \hat{0}_\alpha^+ | I_0 \rangle t_{B_1} t_{A_9, I_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A |\hat{h}|0^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^A 0^I \rangle \langle A_7 |\hat{0}_{\alpha}^- \hat{0}_{\beta}^- \hat{0}_{\alpha}^- |A_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}|1^A 0^I \rangle \langle A_7 |\hat{0}_{\alpha}^- \hat{1}_{\beta}^- \hat{1}_{\alpha}^- |A_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 1^I |\hat{g}|0^I I^I \rangle \langle A_7 |\hat{0}_{\alpha}^- |A_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ \hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I I^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle I_{14} |\hat{1}_{\beta}^+ \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I I^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle I_{14} |\hat{1}_{\beta}^+ \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I I^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle I_{14} |\hat{1}_{\alpha}^+ \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 1^I |\hat{g}|0^I I^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle I_{14} |\hat{1}_{\alpha}^+ \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^I |\hat{g}|0^I I^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle I_{14} |\hat{1}_{\alpha}^+ \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- |I_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|1^J I^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_0 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^J 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_0 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_0 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}|0^I 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_0 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{B_1} t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^B 0^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_1 |\hat{0}_{\beta}^+ \hat{0}_{$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_{12})\rangle =$$

$$+ \frac{-1}{2} \sum_{I} \langle 1^A |\hat{h}|0^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle t_{B_1} t_{A_{10}, I_{12}}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{A}0^{I}\rangle\langle A_{10}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{A}0^{I}\rangle\langle A_{10}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{4}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|0^{I}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{4}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|0^{I}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{4}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{4}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{4}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{4}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{I}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{4}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{I}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{I}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A|\hat{h}|0^I\rangle \langle A_8|\hat{1}^-_{\beta}|A_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle t_{B_1}t_{A_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A|\hat{g}|1^A 0^I\rangle \langle A_8|\hat{1}^+_{\alpha}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|A_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle t_{B_1}t_{A_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A|\hat{g}|1^A 0^I\rangle \langle A_8|\hat{1}^+_{\alpha}\hat{1}^-_{\beta}\hat{1}^-_{\alpha}|A_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle t_{B_1}t_{A_8,I_{14}} \\ &+ \frac{-1}{4} \sum_{I} \langle 1^A 1^I|\hat{g}|0^I 1^I\rangle \langle A_8|\hat{1}^-_{\beta}|A_1\rangle \langle I_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_8,I_{14}} \\ &+ \frac{-1}{4} \sum_{I} \langle 1^A 0^I|\hat{g}|1^I 1^I\rangle \langle A_8|\hat{1}^-_{\beta}|A_1\rangle \langle I_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_8,I_{14}} \\ &+ \frac{1}{4} \sum_{I} \langle 1^A 0^I|\hat{g}|1^I 1^I\rangle \langle A_8|\hat{1}^-_{\beta}|A_1\rangle \langle I_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_8,I_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|0^{I}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|0^{I}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{B}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{B}0^{S}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{8}|\hat{1}_{\beta}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A |\hat{h}|1^I \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^A 1^I \rangle \langle A_9 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- \hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^A 1^I \rangle \langle A_9 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- \hat{1}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{0}_{\alpha}^+ \hat{0}_{\beta}^+ \hat{1}_{\beta}^-|I_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^-|I_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^-|I_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ \hat{0}_{\beta}^+ \hat{0}_{\alpha}^-|I_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^-|I_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^-|I_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle \langle J_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^-|J_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle \langle J_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^-|J_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle \langle J_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^-|J_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle \langle J_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^-|J_0 \rangle t_{B_1} t_{A_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle I_0|\hat{0}_{\alpha}^+ |I_0 \rangle$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A |\hat{h}|1^I \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{1}_\beta^+|I_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^A 1^I \rangle \langle A_7 |\hat{0}_\alpha^+ \hat{0}_\beta^- \hat{0}_\alpha^-|A_1 \rangle \langle I_{13}|\hat{1}_\beta^+|I_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^A 1^I \rangle \langle A_7 |\hat{0}_\alpha^+ \hat{1}_\beta^- \hat{1}_\alpha^-|A_1 \rangle \langle I_{13}|\hat{1}_\beta^+|I_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^I \rangle \langle A_7 |\hat{0}_\alpha^-|A_1 \rangle \langle I_{13}|\hat{0}_\beta^+ \hat{1}_\beta^+ \hat{0}_\beta^-|I_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^I \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{0}_\beta^+ \hat{1}_\beta^+ \hat{0}_\beta^-|I_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 0^I \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{0}_\alpha^+ \hat{0}_\beta^+ \hat{1}_\alpha^-|I_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^I \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{0}_\alpha^+ \hat{1}_\beta^+ \hat{0}_\beta^-|I_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|1^I 0^I \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{0}_\alpha^+ \hat{1}_\beta^+ \hat{0}_\beta^-|I_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^I \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{0}_\alpha^+ \hat{1}_\beta^+ \hat{0}_\beta^-|I_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^A 0^I |\hat{g}|0^I 1^I \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{1}_\beta^+ |I_0 \rangle \langle J_0 |\hat{0}_\beta^+ \hat{0}_\beta^-|J_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{1}_\beta^+ |I_0 \rangle \langle J_0 |\hat{0}_\beta^+ \hat{0}_\beta^-|J_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|1^I 0^J \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{1}_\beta^+ |I_0 \rangle \langle J_0 |\hat{0}_\beta^+ \hat{0}_\beta^-|J_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|1^I 0^J \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{1}_\beta^+ |I_0 \rangle \langle J_0 |\hat{0}_\beta^+ \hat{0}_\beta^-|J_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|1^I 0^J \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{1}_\beta^+ |I_0 \rangle \langle J_0 |\hat{0}_\beta^+ \hat{0}_\alpha^-|J_0 \rangle t_{B_1} t_{A_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^J |\hat{g}|1^I 0^J \rangle \langle A_7 |\hat{0}_\beta^-|A_1 \rangle \langle I_{13}|\hat{0}_\beta^+$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A|\hat{h}|1^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A0^A|\hat{g}|1^A1^I\rangle \langle A_{10}|\hat{1}^+_{\beta}|\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A1^A|\hat{g}|1^A1^I\rangle \langle A_{10}|\hat{1}^+_{\beta}|\hat{1}^-_{\beta}\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A0^I|\hat{g}|0^I1^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{0}^+_{\alpha}\hat{0}^+_{\beta}|\hat{1}^-_{\beta}|I_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A0^I|\hat{g}|0^I1^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{0}^+_{\alpha}\hat{0}^+_{\beta}|\hat{1}^-_{\alpha}|I_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \langle 1^A0^I|\hat{g}|1^I0^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{0}^+_{\alpha}\hat{0}^+_{\alpha}|I_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \langle 1^A0^I|\hat{g}|1^I0^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \langle 1^A0^I|\hat{g}|1^I0^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{1}{4} \sum_{I} \langle 1^A0^I|\hat{g}|0^I^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{1}{4} \sum_{I} \langle 1^A0^I|\hat{g}|0^I^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_0|\hat{0}^+_{\alpha}^+_{\alpha}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 1^A1^I|\hat{g}|0^J^0\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_0|\hat{0}^+_{\alpha}^+_{\alpha}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 1^A1^I|\hat{g}|1^I^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_0|\hat{0}^+_{\alpha}^+_{\alpha}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A1^J|\hat{g}|1^I^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_0|\hat{0}^+_{\alpha}^+_{\alpha}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A0^J|\hat{g}|1^I^I\rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_0|\hat{0}^+_{\alpha}^+_{\alpha}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A1^J|\hat{g}|1^I^I\rangle \langle A_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A|\hat{h}|1^I \rangle \langle A_8|\hat{1}_{\beta}|A_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A|\hat{g}|1^A 1^I \rangle \langle A_8|\hat{1}_{\alpha}^+\hat{0}_{\beta}^-\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A|\hat{g}|1^A 1^I \rangle \langle A_8|\hat{1}_{\alpha}^+\hat{1}_{\beta}^-\hat{1}_{\alpha}^-|A_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \langle 1^A 0^I|\hat{g}|0^I 1^I \rangle \langle A_8|\hat{1}_{\alpha}^+|\hat{1}_{\alpha}^-|A_1 \rangle \langle I_{13}|\hat{0}_{\beta}^+\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \langle 1^A 0^I|\hat{g}|1^I 0^I \rangle \langle A_8|\hat{1}_{\beta}^-|A_1 \rangle \langle I_{13}|\hat{0}_{\beta}^+\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \langle 1^A 0^I|\hat{g}|0^I 1^I \rangle \langle A_8|\hat{1}_{\beta}^-|A_1 \rangle \langle I_{13}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|I_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I|\hat{g}|1^I 0^I \rangle \langle A_8|\hat{1}_{\beta}^-|A_1 \rangle \langle I_{13}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|I_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I|\hat{g}|1^I 0^I \rangle \langle A_8|\hat{1}_{\beta}^-|A_1 \rangle \langle I_{13}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I|\hat{g}|0^I 1^I \rangle \langle A_8|\hat{1}_{\beta}^-|A_1 \rangle \langle I_{13}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^A 1^I|\hat{g}|0^J 0^J \rangle \langle A_8|\hat{1}_{\beta}^-|A_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle \langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^A 1^I|\hat{g}|1^I 0^J \rangle \langle A_8|\hat{1}_{\beta}^-|A_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle \langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^A 1^J|\hat{g}|1^I 0^J \rangle \langle A_8|\hat{1}_{\beta}^-|A_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle \langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^A 1^J|\hat{g}|1^I 0^J \rangle \langle A_8|\hat{1}_{\beta}^-|A_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|J_0 \rangle \langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^J|\hat{g}|1^I 0^J \rangle \langle A_8|\hat{1}_{\beta}^-|A_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|J_0 \rangle \langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0 \rangle t_{B_1}t_{A_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^J|\hat{g}|1^I 0^J \rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{15},B_1,I_6)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^I 0^I \rangle \langle A_{15}|\hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{+} |A_1\rangle \langle I_6|\hat{0}_{\beta}^{-} \hat{0}_{\alpha}^{-} |I_0\rangle t_{B_1} t_{A_{15},I_6} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|1^I 1^I \rangle \langle A_{15}|\hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{+} |A_1\rangle \langle I_6|\hat{1}_{\beta}^{-} \hat{1}_{\alpha}^{-} |I_0\rangle t_{B_1} t_{A_{15},I_6} \end{split}$$

$$\begin{split} &+\frac{1}{2} \sum_{I} \langle 1^{A} 1^{A} | \hat{g} | 0^{I} 0^{I} \rangle \langle A_{15} | \hat{1}^{+}_{\alpha} \hat{1}^{+}_{\beta} | A_{1} \rangle \langle I_{6} | \hat{0}^{-}_{\beta} \hat{0}^{-}_{\alpha} | I_{0} \rangle t_{B_{1}} t_{A_{15}, I_{6}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A} 1^{A} | \hat{g} | 1^{I} 1^{I} \rangle \langle A_{15} | \hat{1}^{+}_{\alpha} \hat{1}^{+}_{\beta} | A_{1} \rangle \langle I_{6} | \hat{1}^{-}_{\beta} \hat{1}^{-}_{\alpha} | I_{0} \rangle t_{B_{1}} t_{A_{15}, I_{6}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_1)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^A0^I\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^A0^I\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^A0^I\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|0^A1^I\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|0^A1^I\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|0^A1^I\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 1^A0^I|\hat{g}|1^A0^I\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 1^A0^I|\hat{g}|1^A0^I\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 1^A1^I|\hat{g}|1^A1^I\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 1^A1^I|\hat{g}|1^A1^I\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 1^A1^I|\hat{g}|1^A1^I\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 1^A1^I|\hat{g}|1^A1^I\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^A|\hat{g}|0^I0^I\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^A|\hat{g}|0^I0^I\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^A|\hat{g}|0^I0^I\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 1^A1^A|\hat{g}|0^I0^I\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 1^A1^A|\hat{g}|0^I0^I\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_2)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^A 1^I \rangle \langle A_0|\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle I_2|\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle t_{B_1,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^A 1^I \rangle \langle A_0|\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle I_2|\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0\rangle t_{B_1,I_2} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A_0I}|\hat{g}|0^{A_1I'}\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A_0I}|\hat{g}|0^{A_1I'}\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_1\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A_0I}|\hat{g}|0^{A_1I'}\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|A_1\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A_0I}|\hat{g}|0^{A_1I'}\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|A_1\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I'}\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I'}\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I'}\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I'}\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I'}\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I'}\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I'}\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A_0A}|\hat{g}|0^{I_1I'}\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A_0A}|\hat{g}|0^{I_1I'}\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_1A}|\hat{g}|0^{I_1I'}\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_1A}|\hat{g}|0^{I_1I'}\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_1A}|\hat{g}|0^{I_1I'}\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|0^{A_1I'}\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_3)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I | \hat{g} | 0^A 1^I \rangle \langle A_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I | \hat{g} | 0^A 1^I \rangle \langle A_0 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I | \hat{g} | 0^A 1^I \rangle \langle A_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I | \hat{g} | 0^A 1^I \rangle \langle A_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I | \hat{g} | 0^A 1^I \rangle \langle A_0 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I | \hat{g} | 0^A 1^I \rangle \langle A_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 1^A 1^I \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 1^A 1^I \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 1^A 1^I \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 1^A 1^I \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 1^A 1^I \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 1^A 1^I \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 1^A 1^I \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 1^A 1^I \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{B_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 1^A 1^I \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I'}\rangle\langle A_0|\hat{1}_{\pi}^{+}\hat{1}_{\pi}|A_1\rangle\langle I_3|\hat{1}_{\pi}^{+}\hat{0}_{\pi}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I'}\rangle\langle A_0|\hat{1}_{\pi}^{+}\hat{1}_{\pi}|A_1\rangle\langle I_3|\hat{1}_{\pi}^{+}\hat{0}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I'}\rangle\langle A_0|\hat{1}_{\pi}^{+}\hat{1}_{\pi}|A_1\rangle\langle I_3|\hat{1}_{\pi}^{+}\hat{0}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A_0A}|\hat{g}|0^{I_II}\rangle\langle A_0|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|A_1\rangle\langle I_3|\hat{0}_{\pi}^{+}\hat{1}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_1A}|\hat{g}|0^{I_II}\rangle\langle A_0|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|A_1\rangle\langle I_3|\hat{0}_{\pi}^{+}\hat{1}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_1A}|\hat{g}|0^{I_II}\rangle\langle A_0|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|A_1\rangle\langle I_3|\hat{0}_{\pi}^{+}\hat{1}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_1A}|\hat{g}|0^{I_II}\rangle\langle A_0|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|A_1\rangle\langle I_3|\hat{0}_{\pi}^{+}\hat{1}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_1A}|\hat{g}|0^{I_1I}\rangle\langle A_0|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|A_1\rangle\langle I_3|\hat{0}_{\pi}^{+}\hat{1}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_1A}|\hat{g}|0^{I_1I}\rangle\langle A_0|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|A_1\rangle\langle I_3|\hat{0}_{\pi}^{+}\hat{1}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_1A}|\hat{g}|0^{I_1I}\rangle\langle A_0|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|A_1\rangle\langle I_3|\hat{0}_{\pi}^{+}\hat{1}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I}\rangle\langle A_0|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|A_1\rangle\langle I_3|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|1^{A_1I}\rangle\langle A_0|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|A_1\rangle\langle I_3|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|I_0\rangle t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A_0I}|\hat{g}|0^{A_1I}\rangle\langle A_0|\hat{0}_{\pi}^{+}\hat{0}_{\pi}^{-}|A$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_1)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^A 0^I|\hat{g}|1^A 0^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 0^I|\hat{g}|1^A 0^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 0^I|\hat{g}|1^A 0^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 0^I|\hat{g}|1^A 0^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 1^I|\hat{g}|1^A 1^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 1^I|\hat{g}|1^A 1^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 0^I|\hat{g}|1^A 0^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 0^I|\hat{g}|1^A 0^I\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 0^I|\hat{g}|1^A 0^I\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 0^I|\hat{g}|1^A 0^I\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 0^I|\hat{g}|1^A 0^I\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 1^I|\hat{g}|1^A 1^I\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 1^I|\hat{g}|0^I^A 0^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 1^I|\hat{g}|0^I^A 0^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 1^I|\hat{g}|0^I^A 0^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^A 1^I|\hat{g}|0^I^A 0^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{0}_{\alpha$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_1)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^A 0^I \rangle \langle A_3|\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_1|\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle t_{A_3} t_{B_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^A 0^I \rangle \langle A_3|\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle I_1|\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|1^A 0^I \rangle \langle A_3|\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_1|\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^I |\hat{g}|1^A 1^I \rangle \langle A_3|\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_1|\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle t_{A_3} t_{B_1,I_1} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_{1}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{1}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{1}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{1}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{1}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{o}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{o}_{\beta}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{o}_{\alpha}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{1} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{1} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{1} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{1} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_2)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}^+_\beta\hat{1}^-_\beta|A_1\rangle\langle I_2|\hat{0}^+_\beta\hat{1}^-_\beta|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_2|\hat{0}^+_\beta\hat{1}^-_\beta|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_2|\hat{0}^+_\alpha\hat{0}^-_\alpha|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}^+_\beta\hat{1}^-_\alpha|A_1\rangle\langle I_2|\hat{1}^+_\beta\hat{0}^-_\alpha|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_2|\hat{1}^+_\beta\hat{0}^-_\beta|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{1}^+_\alpha\hat{0}^-_\alpha|A_1\rangle\langle I_2|\hat{0}^+_\beta\hat{1}^-_\beta|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{1}^+_\alpha\hat{0}^-_\alpha|A_1\rangle\langle I_2|\hat{0}^+_\beta\hat{1}^-_\beta|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{1}^+_\alpha\hat{0}^-_\alpha|A_1\rangle\langle I_2|\hat{0}^+_\beta\hat{1}^-_\beta|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{1}^+_\alpha\hat{0}^-_\alpha|A_1\rangle\langle I_2|\hat{1}^+_\beta\hat{0}^-_\beta|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{1}^+_\alpha\hat{0}^-_\alpha|A_1\rangle\langle I_2|\hat{1}^+_\beta\hat{0}^-_\beta|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|0^I1^I\rangle\langle A_2|\hat{1}^+_\alpha\hat{0}^-_\alpha|A_1\rangle\langle I_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|0^I1^I\rangle\langle A_2|\hat{1}^+_\alpha\hat{0}^-_\alpha|A_1\rangle\langle I_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|I_0\rangle t_{A_2}t_{B_1,I_2} \\ &+\frac{1}{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{g}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2},B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\alpha}\hat{i}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}^{+}_{\beta}\hat{i}_{\beta}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\alpha}\hat{i}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\alpha}\hat{i}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\alpha}\hat{i}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}^{+}_{\alpha}\hat{i}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_3)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_2}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_2}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_2}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_2}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{1}_{\beta}^{-}|1^A1^I\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|1^A1^I\rangle\langle I_3|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_2}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_2|\hat{1}_{\beta}^{-}|1^A1^I\rangle\langle A_2|\hat{1}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{2}|\hat{\sigma}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{\sigma}_{\alpha}^{+}\hat{\tau}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{2}|\hat{\sigma}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{\sigma}_{\alpha}^{+}\hat{\tau}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{\sigma}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{\sigma}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{\sigma}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{\sigma}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{2}|\hat{\sigma}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{\sigma}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{\sigma}_{\alpha}^{+}\hat{\sigma}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{\sigma}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{\sigma}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{\sigma}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|I_{0}\rangle t_{A_{2},B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{\sigma}_{\alpha}^{+}\hat{\sigma}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{\sigma}_{\alpha}^{+$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle L_{A_{2},B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle L_{A_{2},B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle L_{A_{2},B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle L_{A_{2},B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle L_{A_{2},B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle L_{A_{2},B_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle L_{A_{2},B_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}|I_{0}\rangle L_{B_{1},A_{2},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle L_{B_{1},A_{2},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle L_{B_{1},A_{2},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{2},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_2)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\beta}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|A_1\rangle\langle I_2|\hat{1}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|A_1\rangle\langle I_2|\hat{1}^+_{\hat{\pi}}\hat{0}^-_{\hat{\pi}}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{1}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{1}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|1^I0^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|1^I0^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|0^I1^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{1}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|0^I1^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|1^I0^I\rangle\langle A_3|\hat{0}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\hat{\pi}}\hat{0}^-_{\alpha}|I_0\rangle t_{A_3}t_{B_1,I_2} \\ &+$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{2}} \\ &+\frac{1}{2$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{\dagger}\hat{0}_{\beta}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{\dagger}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{\dagger}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{\dagger}\hat{1}_{\alpha$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_3)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_3}t_{B_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{I}0^{I}\rangle\langle A_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{A_{3},B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{1}}t_{A_{3},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{I}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_4,B_1,I_5)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^I \rangle \langle A_4 |\hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle I_5 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle t_{B_1} t_{A_4,I_5} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 1^I \rangle \langle A_4 |\hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle I_5 |\hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle t_{B_1} t_{A_4,I_5} \end{split}$$

$$\begin{split} &+ \frac{-1}{2} \sum_{I} \langle 0^{A} 1^{A} | \hat{g} | 0^{I} 1^{I} \rangle \langle A_{4} | \hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle I_{5} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{B_{1}} t_{A_{4}, I_{5}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A} 1^{A} | \hat{g} | 1^{I} 0^{I} \rangle \langle A_{4} | \hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle I_{5} | \hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle t_{B_{1}} t_{A_{4}, I_{5}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_5,B_1,I_4)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^I \rangle \langle A_5 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_4 |\hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} |I_0\rangle t_{B_1} t_{A_5,I_4} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 1^I \rangle \langle A_5 |\hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle I_4 |\hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} |I_0\rangle t_{B_1} t_{A_5,I_4} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 1^I \rangle \langle A_5 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_4 |\hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{-} |I_0\rangle t_{B_1} t_{A_5,I_4} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^I \rangle \langle A_5 |\hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle I_4 |\hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{-} |I_0\rangle t_{B_1} t_{A_5,I_4} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_6,B_1,I_{15})\rangle = \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^I 0^I \rangle \langle A_6 |\hat{0}_\beta^- \hat{0}_\alpha^- |A_1 \rangle \langle I_{15} |\hat{0}_\alpha^+ \hat{0}_\beta^+ |I_0 \rangle t_{B_1} t_{A_6,I_{15}} \\ &+ \tfrac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|0^I 0^I \rangle \langle A_6 |\hat{1}_\beta^- \hat{1}_\alpha^- |A_1 \rangle \langle I_{15} |\hat{0}_\alpha^+ \hat{0}_\beta^+ |I_0 \rangle t_{B_1} t_{A_6,I_{15}} \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|1^I 1^I \rangle \langle A_6 |\hat{0}_\beta^- \hat{0}_\alpha^- |A_1 \rangle \langle I_{15} |\hat{1}_\alpha^+ \hat{1}_\beta^+ |I_0 \rangle t_{B_1} t_{A_6,I_{15}} \\ &+ \tfrac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^I 1^I \rangle \langle A_6 |\hat{1}_\beta^- \hat{1}_\alpha^- |A_1 \rangle \langle I_{15} |\hat{1}_\alpha^+ \hat{1}_\beta^+ |I_0 \rangle t_{B_1} t_{A_6,I_{15}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{9})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^{B}|\hat{h}|0^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^{B}1^{B}|\hat{g}|1^{B}0^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^{B}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle B_{12}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^{B}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{B}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^{B}1^{B}|\hat{g}|1^{B}0^{I}\rangle\langle B_{12}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^{B}1^{B}|\hat{g}|1^{B}0^{I}\rangle\langle B_{12}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{B}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{B}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{B}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{B}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{B}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{A_{1}}t_{B_{12},I_{9}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{B}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{B}0^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{B}0^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{12}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^B |\hat{h}|0^I \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^B 1^B |\hat{g}|1^B 0^I \rangle \langle B_{14}|\hat{0}_{\beta}^+ \hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^B 1^B |\hat{g}|0^I 1^B \rangle \langle B_{14}|\hat{1}_{\beta}^+ \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B 1^B |\hat{g}|0^I 1^B \rangle \langle B_{14}|\hat{1}_{\alpha}^+ \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B 1^B |\hat{g}|1^B 0^I \rangle \langle B_{14}|\hat{1}_{\alpha}^+ \hat{1}_{\beta}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B 1^B |\hat{g}|1^B 0^I \rangle \langle B_{14}|\hat{0}_{\beta}^+ \hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{1}{4} \sum_{I} \langle 0^B 1^B |\hat{g}|1^B 0^I \rangle \langle B_{14}|\hat{0}_{\beta}^+ \hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{1}{4} \sum_{I} \langle 0^B 0^B 1^B |\hat{g}|1^B 0^I \rangle \langle B_{14}|\hat{0}_{\beta}^+ \hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}|0^I 0^I \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_7|\hat{0}_{\alpha}^+ \hat{0}_{\beta}^- \hat{0}_{\alpha}^- |I_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^B 0^I |\hat{g}|0^I 0^J \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle \langle J_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 0^J \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle \langle J_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 0^J \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle \langle J_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 0^J \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle \langle J_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0 \rangle t_{A_1} t_{B_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 0^J \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_7|\hat{0}_{\beta}^- |I_0 \rangle \langle J_0|\hat{0}_{\beta}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{B}0^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{B}0^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{B}0^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}\\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{10})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^B|\hat{h}|1^I\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|1^B1^I\rangle\langle B_{12}|\hat{0}^+_{\alpha}|\hat{a}^+_{\alpha}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|1^B1^B\rangle\langle B_{12}|\hat{1}^+_{\alpha}\hat{0}^+_{\alpha}|\hat{a}^-_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|1^I1^B\rangle\langle B_{12}|\hat{0}^+_{\alpha}\hat{1}^+_{\alpha}\hat{a}^-_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|1^I1^B\rangle\langle B_{12}|\hat{0}^+_{\alpha}\hat{1}^+_{\beta}\hat{a}^-_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^B1^I\rangle\langle B_{12}|\hat{0}^+_{\alpha}\hat{1}^+_{\beta}\hat{a}^-_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^B1^I\rangle\langle B_{12}|\hat{1}^+_{\alpha}\hat{0}^+_{\alpha}\hat{a}^-_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^B1^I\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^+_{\beta}\hat{0}^-_{\beta}\hat{a}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|0^I1^I\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^+_{\beta}\hat{0}^-_{\beta}\hat{a}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^I|\hat{g}|1^J1^I\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^+_{\beta}\hat{1}^-_{\beta}\hat{a}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J1^J\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J1^J\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^A1^I\rangle\langle A_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^A1^I\rangle\langle A_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{12},I_{10}}$$

$$+ \frac{1}{2} \sum_{I} \langle 1^A 0^B | \hat{g} | 1^A 1^I \rangle \langle A_1 | \hat{1}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_{12} | \hat{0}^+_\alpha | B_1 \rangle \langle I_{10} | \hat{1}^-_\alpha | I_0 \rangle t_{A_1} t_{B_{12}, I_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^B|\hat{h}|I^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{-1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|1^B1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{-1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|1^I1^B\rangle\langle B_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{-1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|1^I1^B\rangle\langle B_{14}|\hat{1}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{-1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^I1^B\rangle\langle B_{14}|\hat{1}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{-1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^B1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|1^B1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|1^B1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|0^I1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^+_{\alpha}\hat{1}^-_{\beta}\hat{1}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^I0^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^I0^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^I0^J\rangle\langle A_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle B_1|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^A1^I\rangle\langle A_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle B_1|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^A1^I\rangle\langle A_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_9)\rangle =$$

$$+\frac{1}{2} \sum_{I} \langle 1^B |\hat{h}|0^I \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle t_{A_1} t_{B_{11}, I_9}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\langle 0^{B}l^{B}|\hat{g}|0^{B}0^{I}\rangle\langle B_{11}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{-1}{4}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{B}0^{I}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{B}0^{I}\rangle\langle B_{11}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{g}_{1}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{B}0^{I}\rangle\langle B_{11}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{+}\hat{g}_{0}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{4}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{B}0^{I}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{g}_{0}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{B}0^{I}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}\hat{g}_{0}^{+}\hat{g}_{0}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\beta}^{+}\hat{g}_{0}^{-}\hat{g}_{0}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\beta}^{+}\hat{g}_{0}^{-}\hat{g}_{0}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}1^{J}|\hat{g}|0^{A}1^{J}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^B|\hat{h}|0^I\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B0^B|\hat{g}|1^B0^I\rangle \langle B_{13}|\hat{0}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_7} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^B1^B|\hat{g}|0^B0^I\rangle \langle B_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B1^B|\hat{g}|0^B0^I\rangle \langle B_{13}|\hat{0}^+_{\alpha}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_7} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^B0^B|\hat{g}|1^B0^I\rangle \langle B_{13}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_7} \\ &+ \frac{1}{4} \sum_{I} \langle 0^B0^B|\hat{g}|1^B0^I\rangle \langle B_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_7} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{B}0^{I}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|0^{I}0^{I}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{A}0^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{B}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 1^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 1^B|\hat{h}|1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^B|\hat{g}|1^B1^I\rangle\langle B_{13}|\hat{0}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{-1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|0^B1^I\rangle\langle B_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{-1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|0^B1^I\rangle\langle B_{13}|\hat{0}^+_{\alpha}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{-1}{2}\sum_{I}\langle 0^B0^B|\hat{g}|1^B1^I\rangle\langle B_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{4}\sum_{I}\langle 0^B0^B|\hat{g}|1^B1^I\rangle\langle B_{13}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|0^B1^I\rangle\langle B_{13}|\hat{0}^+_{\beta}\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{4}\sum_{I}\langle 0^B1^B|\hat{g}|0^B1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 1^B0^I|\hat{g}|0^I1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^+_{\alpha}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|I_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^+_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|1^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|1^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|1^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{13},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 1^B1^J|\hat{g}|1^J1^J\rangle\langle B_1^J|\hat{g}|1^J1^J$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{B}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{B}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12})\rangle = \\ &+\frac{-1}{2}\sum_I \langle 0^B|\hat{h}|0^I\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{-1}{2}\sum_I \langle 0^B0^B|\hat{g}|0^B0^I\rangle\langle B_9|\hat{0}^+_\beta\hat{0}^-_\beta\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{-1}{2}\sum_I \langle 0^B1^B|\hat{g}|1^B0^I\rangle\langle B_9|\hat{0}^+_\beta\hat{1}^-_\beta\hat{1}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{-1}{2}\sum_I \langle 0^B1^B|\hat{g}|1^B0^I\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha\hat{1}^+_\alpha\hat{1}^-_\alpha|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{-1}{4}\sum_I \langle 0^B1^I|\hat{g}|0^II^I\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha\hat{1}^+_\beta\hat{1}^-_\beta|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{-1}{2}\sum_I \langle 0^B0^I|\hat{g}|1^II^I\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{1}^+_\alpha\hat{0}^+_\alpha\hat{1}^-_\alpha|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{-1}{4}\sum_I \langle 0^B0^I|\hat{g}|1^II^I\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{1}^+_\alpha\hat{1}^+_\beta\hat{1}^-_\beta|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{1}{4}\sum_I \langle 0^B0^I|\hat{g}|1^II^I\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha\hat{1}^+_\alpha\hat{1}^-_\alpha|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{1}{4}\sum_I \langle 0^B0^I|\hat{g}|1^II^I\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha\hat{1}^+_\alpha\hat{1}^-_\alpha|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{1}{4}\sum_I \langle 0^B0^I|\hat{g}|0^J0^J\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha\hat{1}^-_\alpha|I_0\rangle\langle I_0|\hat{0}^+_\alpha\hat{0}^-_\alpha|J_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{1}{2}\sum_I \sum_J \langle 0^B0^I|\hat{g}|0^J0^J\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha|I_0\rangle\langle J_0|\hat{0}^+_\alpha\hat{0}^-_\alpha|J_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{1}{2}\sum_I \sum_J \langle 0^B0^I|\hat{g}|0^J0^J\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha|I_0\rangle\langle J_0|\hat{0}^+_\alpha\hat{0}^-_\alpha|J_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{1}{2}\sum_I \sum_J \langle 0^B0^J|\hat{g}|0^J0^J\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha|I_0\rangle\langle J_0|\hat{0}^+_\alpha\hat{0}^-_\alpha|J_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{1}{2}\sum_I \sum_J \langle 0^B0^J|\hat{g}|0^J0^J\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha|I_0\rangle\langle J_0|\hat{0}^+_\beta\hat{0}^-_\beta|J_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{1}{2}\sum_I \langle 0^A0^B|\hat{g}|0^A0^I\rangle\langle A_1|\hat{0}^+_\alpha\hat{0}^-_\alpha|A_1\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{1}{2}\sum_I \langle 1^A0^B|\hat{g}|1^A0^I\rangle\langle A_1|\hat{0}^+_\alpha\hat{0}^-_\alpha|A_1\rangle\langle B_9|\hat{0}^-_\alpha|B_1\rangle\langle I_{12}|\hat{0}^+_\alpha|I_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+\frac{1}{2}\sum_I \langle 1^A0^B|\hat{g}|0^A0^I\rangle\langle A_1|\hat{0}^+_\alpha\hat{0}^-_\alpha|A_1$$

$$\begin{split} & + \frac{1}{2} \sum_{I} \langle 0^B | \hat{h} | 0^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ | I_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 0^B | \hat{g} | 0^B 0^I \rangle \langle B_7 | \hat{0}_\alpha^- \hat{0}_\beta^- \hat{0}_\alpha^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ | I_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 0^B | \hat{g} | 0^B 0^I \rangle \langle B_7 | \hat{0}_\alpha^+ \hat{0}_\beta^- \hat{0}_\alpha^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ | I_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 1^B 0^I \rangle \langle B_7 | \hat{0}_\alpha^+ \hat{1}_\beta^- \hat{1}_\alpha^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ | I_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{4} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^I 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ \hat{1}_\beta^+ \hat{1}_\beta^- | I_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{4} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^I 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ \hat{1}_\beta^+ \hat{1}_\beta^- | I_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{4} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^I 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ \hat{1}_\beta^+ \hat{1}_\beta^- | I_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{4} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^I 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{1}_\alpha^+ \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{4} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^I 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{1}_\alpha^+ \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{2} \sum_{I} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^I 1^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ | I_0 \rangle \langle J_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | J_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{2} \sum_{I} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^I 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ | I_0 \rangle \langle J_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | J_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{2} \sum_{I} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^I 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ | I_0 \rangle \langle J_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | J_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{2} \sum_{I} \sum_{I} \langle 0^B 0^J | \hat{g} | 0^I 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ | I_0 \rangle \langle J_0 | \hat{0}_\beta^+ \hat{0}_\beta^- | J_0 \rangle t_{A_1} t_{B_7, I_{14}} \\ & + \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^I 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_{14} | \hat{0}_\beta^+ | I_0 \rangle \langle J_0 |$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^B|\hat{h}|0^I\rangle \langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle t_{A_1} t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B0^B|\hat{g}|1^B0^I\rangle \langle B_{10}|\hat{1}_{\beta}^+\hat{0}_{\beta}^-\hat{0}_{\alpha}^-|B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle t_{A_1} t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I} \langle 1^{B}1^{B}|\hat{g}|1^{B}0^{I}\rangle \langle B_{10}|\hat{1}_{h}^{+}\hat{1}_{h}^{-}\hat{1}_{a}|B_{1}\rangle \langle I_{12}|\hat{0}_{h}^{+}I_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{4}\sum_{I} \langle 1^{B}1^{I}|\hat{g}|0^{I}1^{I}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{0}_{h}^{+}\hat{1}_{h}^{+}\hat{1}_{a}|I_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{2}\sum_{I} \langle 1^{B}1^{I}|\hat{g}|0^{I}1^{I}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{0}_{h}^{+}\hat{1}_{h}^{+}\hat{1}_{a}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{2}\sum_{I} \langle 1^{B}0^{I}|\hat{g}|1^{I}1^{I}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{1}_{h}^{+}\hat{0}_{h}^{+}\hat{1}_{a}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{4}\sum_{I} \langle 1^{B}0^{I}|\hat{g}|1^{I}1^{I}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{1}_{h}^{+}\hat{0}_{h}^{+}\hat{1}_{a}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{4}\sum_{I} \langle 1^{B}0^{I}|\hat{g}|1^{I}1^{I}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{0}_{h}^{+}\hat{1}_{h}^{+}\hat{0}_{a}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{4}\sum_{I} \langle 1^{B}1^{I}|\hat{g}|0^{I}1^{I}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{0}_{h}^{+}\hat{1}_{h}^{-}\hat{0}_{a}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{4}\sum_{I} \langle 1^{B}0^{I}|\hat{g}|0^{I}1^{J}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{0}_{h}^{+}|I_{0}\rangle \langle J_{0}|\hat{0}_{h}^{+}\hat{0}_{a}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{2}\sum_{I} \sum_{J} \langle 1^{B}0^{I}|\hat{g}|0^{I}0^{J}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{0}_{h}^{+}|I_{0}\rangle \langle J_{0}|\hat{0}_{h}^{+}\hat{0}_{a}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{2}\sum_{I} \sum_{J} \langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{0}_{h}^{+}|I_{0}\rangle \langle J_{0}|\hat{0}_{h}^{+}\hat{0}_{a}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{2}\sum_{I} \sum_{J} \langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{0}_{h}^{+}|I_{0}\rangle \langle J_{0}|\hat{0}_{h}^{+}\hat{0}_{a}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{2}\sum_{I} \langle 1^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle \langle B_{10}|\hat{1}_{a}^{-}|B_{1}\rangle \langle I_{12}|\hat{0}_{h}^{+}|I_{0}\rangle \langle J_{0}|\hat{0}_{h}^{+}\hat{0}_{a}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}} \\ &+\frac{1}{2}\sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle \langle A_{1}|\hat{0}_{h}^{+}\hat{0}_{a}^{-}|A_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{14})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{B}|\hat{h}|0^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{B}0^{I}\rangle\langle B_{8}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|1^{B}0^{I}\rangle\langle B_{8}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|0^{I}1^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}} \\ &+ \frac{1}{4}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}} \\ &+ \frac{1}{4}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|0^{I}1^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}} \\ &+ \frac{1}{4}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|0^{I}1^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|0^{I}1^{I}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{1}^{+}_{\alpha}\hat{0}^{+}_{\beta}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{I}1^{I}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{1}^{+}_{\alpha}\hat{1}^{+}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{0}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\alpha}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{A}0^{I}\rangle\langle A_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\alpha}|A_{1}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\alpha}|A_{1}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{B}0^{I}\rangle\langle A_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|A_{1}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{B}0^{I}\rangle\langle A_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|A_{1}\rangle\langle B_{8}|\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{B}0^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B|\hat{h}|1^I\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B0^B|\hat{g}|0^B1^I\rangle \langle B_9|\hat{0}_{\beta}^+\hat{0}_{\beta}^-\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B1^B|\hat{g}|1^B1^I\rangle \langle B_9|\hat{0}_{\beta}^+\hat{1}_{\beta}^-\hat{1}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B0^I|\hat{g}|0^I1^I\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^B0^I|\hat{g}|0^I1^I\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \langle 0^B0^I|\hat{g}|1^I0^I\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B0^I|\hat{g}|1^I0^I\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+\hat{0}_{\beta}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^B0^I|\hat{g}|1^I0^I\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{1}{4} \sum_{I} \langle 0^B0^I|\hat{g}|0^I1^I\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{I} \langle 0^B1^I|\hat{g}|0^J0^J\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^B1^I|\hat{g}|1^J1^J\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^B1^I|\hat{g}|1^J1^J\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^B0^J|\hat{g}|1^I0^J\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^B0^J|\hat{g}|1^I0^J\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 0^B0^J|\hat{g}|1^J0^J\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{0}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{0}_{\alpha}^+$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{B}1^{I}\rangle\langle A_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{A}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13})\rangle = \\ &+\frac{-1}{2}\sum_{I}\langle 0^B|\hat{h}|I^I\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^B|\hat{g}|0^B1^I\rangle\langle B_7|\hat{0}_\alpha^+\hat{0}_\beta^-\hat{0}_\alpha^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^B1^I\rangle\langle B_7|\hat{0}_\alpha^+\hat{1}_\beta^-\hat{1}_\alpha^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|0^I1^I\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{0}_\beta^+\hat{1}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{-1}{4}\sum_{I}\langle 0^B0^I|\hat{g}|0^I1^I\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{0}_\beta^+\hat{1}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^I0^I\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{0}_\beta^+\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^I0^I\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{0}_\beta^+\hat{1}_\beta^+\hat{0}_\alpha^-|I_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^I0^I\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{0}_\beta^+\hat{1}_\beta^+\hat{0}_\alpha^-|I_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|0^I1^I\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 0^B0^I|\hat{g}|0^I1^I\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_0|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 0^B1^I|\hat{g}|0^J0^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_0|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\sum_{I}\langle 0^B0^I|\hat{g}|1^I0^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_0|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I0^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_0|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I0^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_0|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I0^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_0|\hat{1}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|0^A1^I\rangle\langle A_1|\hat{0}_\beta^+\hat{0}_\beta^-|A_1\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_0|\hat{1}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{A_1}t_{B_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{B}1^{I}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{I}\rangle\langle A_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{11})\rangle = \\ &+\frac{-1}{2}\sum_I \langle 1^B|\hat{h}|1^I\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{-1}{2}\sum_I \langle 0^B0^B|\hat{g}|1^B1^I\rangle\langle B_{10}|\hat{1}^+_\beta\hat{0}^-_\beta\hat{0}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{-1}{2}\sum_I \langle 1^B1^B|\hat{g}|1^B1^I\rangle\langle B_{10}|\hat{1}^+_\beta\hat{0}^-_\beta\hat{0}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{-1}{2}\sum_I \langle 1^B0^I|\hat{g}|0^I1^I\rangle\langle B_{10}|\hat{1}^+_\alpha|B_1\rangle\langle I_{11}|\hat{0}^+_\alpha\hat{0}^+_\beta\hat{1}^-_\alpha|I_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{-1}{2}\sum_I \langle 1^B0^I|\hat{g}|0^I1^I\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{0}^+_\alpha\hat{0}^+_\beta\hat{1}^-_\alpha|I_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{-1}{4}\sum_I \langle 1^B0^I|\hat{g}|1^I0^I\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha\hat{0}^+_\alpha\hat{0}^-_\alpha|I_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{-1}{4}\sum_I \langle 1^B0^I|\hat{g}|1^I0^I\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha\hat{0}^+_\alpha\hat{0}^-_\alpha|I_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{-1}{2}\sum_I \langle 1^B0^I|\hat{g}|1^I0^I\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha\hat{0}^+_\alpha\hat{0}^-_\alpha|I_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{1}{4}\sum_I \langle 1^B0^I|\hat{g}|1^I0^I\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha\hat{0}^+_\alpha\hat{0}^-_\alpha|I_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{1}{4}\sum_I \langle 1^B0^I|\hat{g}|0^I0^I\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha\hat{0}^+_\alpha\hat{0}^-_\alpha|I_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{1}{4}\sum_I \langle 1^B0^I|\hat{g}|0^J0^J\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_0|\hat{0}^+_\alpha\hat{0}^-_\alpha|J_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{1}{2}\sum_I \sum_J \langle 1^B1^I|\hat{g}|0^J0^J\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_0|\hat{0}^+_\alpha\hat{0}^-_\alpha|J_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{1}{2}\sum_I \sum_J \langle 1^B0^J|\hat{g}|1^I0^J\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_0|\hat{0}^+_\alpha\hat{0}^-_\alpha|J_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{1}{2}\sum_I \sum_J \langle 1^B0^J|\hat{g}|1^I0^J\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_0|\hat{0}^+_\alpha\hat{0}^-_\alpha|J_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{1}{2}\sum_I \langle 1^B0^J|\hat{g}|1^I0^J\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_0|\hat{0}^+_\alpha\hat{0}^-_\alpha|J_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+\frac{1}{2}\sum_I \langle 1^B0^J|\hat{g}|1^I0^J\rangle\langle B_{10}|\hat{0}^-_\alpha|A_1\rangle\langle B_{10}|\hat{1}^-_\alpha|B_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle t_{A_1}t_{B_{10$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^B|\hat{h}|1^I \rangle \langle B_8|\hat{1}_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^B|\hat{g}|1^B 1^I \rangle \langle B_8|\hat{1}_{\alpha}^+\hat{0}_{\beta}^-\hat{0}_{\alpha}^-|B_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 1^B|\hat{g}|1^B 1^I \rangle \langle B_8|\hat{1}_{\alpha}^+\hat{1}_{\beta}^-\hat{1}_{\alpha}^-|B_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \langle 1^B 0^I|\hat{g}|0^I 1^I \rangle \langle B_8|\hat{1}_{\alpha}^+|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{0}_{\beta}^+\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \langle 1^B 0^I|\hat{g}|1^I 0^I \rangle \langle B_8|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{0}_{\beta}^+\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \langle 1^B 0^I|\hat{g}|0^I 1^I \rangle \langle B_8|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|I_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I|\hat{g}|1^I 0^I \rangle \langle B_8|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|I_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \langle 1^B 0^I|\hat{g}|1^I 0^I \rangle \langle B_8|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I|\hat{g}|0^I 1^I \rangle \langle B_8|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^B 1^I|\hat{g}|0^J 0^J \rangle \langle B_8|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle \langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^B 1^I|\hat{g}|1^J 1^J \rangle \langle B_8|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle \langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^B 0^J|\hat{g}|1^I 0^J \rangle \langle B_8|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle \langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \sum_{J} \langle 1^B 1^J|\hat{g}|1^J 1^J \rangle \langle B_8|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle \langle J_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 1^J|\hat{g}|1^J 1^J \rangle \langle B_8|\hat{1}_{\beta}^-|B_1 \rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0 \rangle \langle J_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0 \rangle t_{A_1} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 1^J|\hat$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{15},I_6)\rangle = \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^B 0^B |\hat{g}|0^I 0^I \rangle \langle B_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|B_1\rangle \langle I_6|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1} t_{B_{15},I_6} \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^B 0^B |\hat{g}|1^I 1^I \rangle \langle B_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|B_1\rangle \langle I_6|\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_1} t_{B_{15},I_6} \\ &+ \tfrac{1}{2} \sum_{I} \langle 1^B 1^B |\hat{g}|0^I 0^I \rangle \langle B_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|B_1\rangle \langle I_6|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1} t_{B_{15},I_6} \end{split}$$

$$+ \frac{1}{2} \sum_{I} \langle 1^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_{15} | \hat{1}_{\alpha}^+ \hat{1}_{\beta}^+ | B_1 \rangle \langle I_6 | \hat{1}_{\beta}^- \hat{1}_{\alpha}^- | I_0 \rangle t_{A_1} t_{B_{15}, I_6}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_1)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^B 0^I \rangle \langle B_0 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^B 0^I \rangle \langle B_0 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_1 \rangle \langle I_1 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 0^B 0^I \rangle \langle B_0 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 1^I | \hat{g} | 0^B 1^I \rangle \langle B_0 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 1^I | \hat{g} | 0^B 1^I \rangle \langle B_0 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 1^I | \hat{g} | 0^B 1^I \rangle \langle B_0 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 1^I | \hat{g} | 0^B 1^I \rangle \langle B_0 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_0 | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_0 | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 1^I | \hat{g} | 1^B 1^I \rangle \langle B_0 | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 1^I | \hat{g} | 1^B 1^I \rangle \langle B_0 | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^B | \hat{g} | 0^I 0^I \rangle \langle B_0 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^B | \hat{g} | 1^I 1^I \rangle \langle B_0 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_1 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_0 \rangle t_{A_1,I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^B | \hat{g} | 1^I 1^I \rangle \langle B_0 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_1 \rangle \langle I_1 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_0 \rangle t_{A_1,$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_2)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}|0^B 1^I \rangle \langle B_0 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_1,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}|0^B 1^I \rangle \langle B_0 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}|0^B 1^I \rangle \langle B_0 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_2} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_3)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}|0^B 1^I \rangle \langle B_0 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}|0^B 1^I \rangle \langle B_0 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}|0^B 1^I \rangle \langle B_0 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}|0^B 1^I \rangle \langle B_0 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}|0^B 1^I \rangle \langle B_0 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}|0^B 1^I \rangle \langle B_0 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I |\hat{g}|1^B 1^I \rangle \langle B_0 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I |\hat{g}|1^B 1^I \rangle \langle B_0 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I |\hat{g}|1^B 1^I \rangle \langle B_0 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I |\hat{g}|1^B 1^I \rangle \langle B_0 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I |\hat{g}|1^B 1^I \rangle \langle B_0 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I |\hat{g}|1^B 1^I \rangle \langle B_0 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I |\hat{g}|1^B 1^I \rangle \langle B_0 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I |\hat{g}|1^B 1^I \rangle \langle B_0 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^B 0^I |\hat{g}|1^B 1^I \rangle \langle B_0 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle B_{0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_1)\rangle = \\ &+ \frac{1}{2} \sum_I \langle 0^B 0^I |\hat{g}| 1^B 0^I \rangle \langle B_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 0^I |\hat{g}| 1^B 0^I \rangle \langle B_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 0^I |\hat{g}| 1^B 0^I \rangle \langle B_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 1^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 1^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 1^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 0^I |\hat{g}| 1^B 0^I \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 0^I |\hat{g}| 1^B 0^I \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 0^I |\hat{g}| 1^B 0^I \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 0^I |\hat{g}| 1^B 0^I \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 1^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 1^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 1^B |\hat{g}| 0^I 0^I \rangle \langle B_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 1^B |\hat{g}| 0^I 0^I \rangle \langle B_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+ \frac{1}{2} \sum_I \langle 0^B 1^B |\hat{g}| 1^I 1^I \rangle \langle B_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta | I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\alpha | B_1 \rangle \langle I_1 | \hat{1}_\alpha^+ \hat{1}_\alpha | I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 1^I \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_1 | \hat{1}_\beta^+ \hat{1}_\beta | I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{0}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_1 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{0}_\beta^+ \hat{1}_\beta | B_1 \rangle \langle I_1 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\beta^+ \hat{1}_\beta | B_1 \rangle \langle I_1 | \hat{1}_\alpha^+ \hat{1}_\alpha | I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{0}_\beta^+ \hat{1}_\beta | B_1 \rangle \langle I_1 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1} t_{B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha | B_1 \rangle \langle I_1 | \hat{0}_\alpha^+ \hat{0}_\alpha | I_0 \rangle t_{A_1,B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta | I_0 \rangle t_{A_1,B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta | I_0 \rangle t_{A_1,B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta | I_0 \rangle t_{A_1,B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta | I_0 \rangle t_{A_1,B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{1}_\alpha^+ \hat{0}_\alpha | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta | I_0 \rangle t_{A_1,B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{1}_\alpha^+ \hat{0}_\alpha | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta | I_0 \rangle t_{A_1,B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 0^I \rangle \langle B_2 | \hat{1}_\alpha^+ \hat{0}_\alpha | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta | I_0 \rangle t_{A_1,B_2,I_1} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 0^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{0}_\alpha | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta | I_0 \rangle t_{A_1,B_2,I_1} \\ &+\frac{1}{2}\sum_{I}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{\sigma}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{\sigma}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{1}} \\$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_1)\rangle = \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 0^I \rangle \langle B_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_1 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0 \rangle t_{A_1} t_{B_3,I_1} \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 0^I \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_3,I_1} \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 0^I \rangle \langle B_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_3,I_1} \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^B 1^I |\hat{g}| 1^B 1^I \rangle \langle B_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_1 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_1} t_{B_3,I_1} \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^B 1^I |\hat{g}| 1^B 1^I \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_1 |\hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_3,I_1} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3},I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{o}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{o}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{o}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{o}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_2)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^I0^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle t_{A_1}t_{B_2,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{i}_{\beta}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{2},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1},B_{2}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{2}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_3)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I |\hat{g}| 1^B 1^I \rangle \langle B_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_2,I_3} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{1}^{\dagger}_{\mu}\hat{o}^{-}_{\mu}|B_1\rangle\langle I_3|\hat{1}^{\dagger}_{\mu}\hat{o}^{-}_{\mu}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{1}^{\dagger}_{\mu}\hat{o}^{-}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{o}^{-}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^I0^I\rangle\langle B_2|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{o}^{\dagger}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^I0^I\rangle\langle B_2|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{o}^{\dagger}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_2|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{1}^{\dagger}_{\mu}\hat{o}^{\dagger}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_2|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{o}^{\dagger}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_2|\hat{0}^{\dagger}_{\mu}\hat{o}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{o}^{\dagger}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_2|\hat{1}^{\dagger}_{\mu}\hat{o}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^I0^I\rangle\langle B_2|\hat{1}^{\dagger}_{\mu}\hat{o}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^I0^I\rangle\langle B_2|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|I_0\rangle t_{A_1}t_{B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_2|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|B_1\rangle\langle I_3|\hat{0}^{\dagger}_{\mu}\hat{a}^{\dagger}_{\alpha}|I_0\rangle t_{A_1,B_2,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 1^I \rangle \langle B_2 | \hat{0}_\beta^+ \hat{1}_\beta | B_1 \rangle \langle I_3 | \hat{1}_\beta^+ \hat{0}_\beta | I_0 \rangle k_{A_1,B_2} t_{I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 1^I \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\alpha | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha | I_0 \rangle k_{A_1,B_2} t_{I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 0^I 1^I \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\alpha | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta | I_0 \rangle k_{A_1,B_2} t_{I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 0^I \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\alpha | B_1 \rangle \langle I_3 | \hat{1}_\beta^+ \hat{0}_\alpha | I_0 \rangle k_{A_1,B_2} t_{I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 1^B | \hat{g} | 1^I 0^I \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\beta | B_1 \rangle \langle I_3 | \hat{1}_\beta^+ \hat{0}_\alpha | I_0 \rangle k_{A_1,B_2} t_{I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\beta^+ \hat{1}_\beta | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle k_{A_1,B_2} t_{I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\beta^+ \hat{1}_\beta | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle k_{A_1,B_2} t_{I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\beta^+ \hat{1}_\beta | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle k_{A_1,B_2} t_{I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle k_{A_1,B_2} t_{I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle k_{B_2} t_{A_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle k_{B_2} t_{A_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle k_{B_2} t_{A_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle k_{B_2} t_{A_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle k_{B_2} t_{A_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle k_{B_2} t_{A_1,I_3} \\ &+\frac{1}{2}\sum_{I}\langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | B_1 \rangle$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{B_{2}}t_{A_{1},I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{3}}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{2}|\hat{0}^{+}_{\alpha}\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_2)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\beta} | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^{+} \hat{1}_{\beta} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | B_1 \rangle \langle I_2 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | B_1 \rangle \langle I_2 | \hat{1}_{\beta}^{+} \hat{0}_{\beta} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 1^I 0^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^{+} \hat{0}_{\beta} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 0^I 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^{+} \hat{0}_{\beta} | I_0 \rangle t_{A_1} t_{B_3,I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 0^I 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^{+} \hat{0}_{\beta} | I_0 \rangle t_{A_1} t_{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_3|\hat{1}_\alpha^+\hat{o}_\alpha|B_1\rangle\langle L_2|\hat{0}_\beta^+\hat{g}_\beta^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_3|\hat{1}_\alpha^+\hat{o}_\alpha^-|B_1\rangle\langle L_2|\hat{1}_\alpha^+\hat{o}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_3|\hat{1}_\alpha^+\hat{o}_\alpha^-|B_1\rangle\langle L_2|\hat{1}_\beta^+\hat{o}_\beta^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_3|\hat{1}_\alpha^+\hat{o}_\alpha^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{o}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^I0^I\rangle\langle B_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{o}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^I0^I\rangle\langle B_3|\hat{0}_\beta^+\hat{1}_\alpha^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{o}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_3|\hat{0}_\beta^+\hat{1}_\alpha^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{o}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_3|\hat{0}_\beta^+\hat{1}_\alpha^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{o}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_3|\hat{0}_\beta^+\hat{0}_\alpha^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{o}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|0^I1^I\rangle\langle B_3|\hat{0}_\beta^+\hat{0}_\alpha^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^I0^I\rangle\langle B_3|\hat{0}_\beta^+\hat{0}_\alpha^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B1^B|\hat{g}|1^I0^I\rangle\langle B_3|\hat{0}_\beta^+\hat{0}_\beta^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_3|\hat{0}_\beta^+\hat{0}_\beta^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_3|\hat{0}_\beta^+\hat{0}_\beta^-|B_1\rangle\langle L_2|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{B_3}t_{A_1,I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I\rangle\langle B_3|\hat{0}_\alpha^+\hat{0}_\alpha^-|B_1\rangle\langle L_2|\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_1}t_{B_3}t_{I_2} \\ &+\frac{1}{2}\sum_{I}\langle 0^B0^I|\hat{g}|1^B1^I$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_3)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle \langle I_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 0^I | \hat{g} | 1^B 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 1^I 0^I \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{A_1} t_{B_3,I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^B 1^B | \hat{g} | 1^I 0^I \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{A_1} t_{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle\langle L_{A_{1}}t_{B_{3},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle L_{A_{1}}t_{B_{3},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle\langle L_{A_{1}}t_{B_{3},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle L_{A_{1}}t_{B_{3},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle L_{A_{1}}t_{B_{3},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle L_{A_{1}}t_{B_{3},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle L_{A_{1}}t_{B_{3},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle L_{A_{1}}t_{B_{3},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle L_{A_{1}}t_{B_{3},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle L_{A_{1},B_{3}}t_{3}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle L_{A_{1},B_{3}}t_{3}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle L_{A_{1},B_{3}}t_{3}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle L_{A_{1},B_{3}}t_{3}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle L_{A_{1},B_{3}}t_{3}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{1},A_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{1},I_{3}}\\ &+\frac{1}{2}\sum_$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}0^{I}|\hat{g}|1^{I}0^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_4,I_5)\rangle = \\ &+ \frac{-1}{2} \sum_I \langle 0^B 1^B |\hat{g}| 1^I 0^I \rangle \langle B_4 |\hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_5 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_1} t_{B_4,I_5} \\ &+ \frac{-1}{2} \sum_I \langle 0^B 1^B |\hat{g}| 0^I 1^I \rangle \langle B_4 |\hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_5 |\hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} |I_0 \rangle t_{A_1} t_{B_4,I_5} \\ &+ \frac{-1}{2} \sum_I \langle 0^B 1^B |\hat{g}| 0^I 1^I \rangle \langle B_4 |\hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_5 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_1} t_{B_4,I_5} \end{split}$$

$$+ \tfrac{-1}{2} \sum_I \langle 0^B 1^B | \hat{g} | 1^I 0^I \rangle \langle B_4 | \hat{1}_\alpha^+ \hat{0}_\beta^- | B_1 \rangle \langle I_5 | \hat{1}_\beta^+ \hat{0}_\alpha^- | I_0 \rangle t_{A_1} t_{B_4, I_5}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_5,I_4)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B 1^B |\hat{g}| 1^I 0^I \rangle \langle B_5 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_4 |\hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_5,I_4} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B 1^B |\hat{g}| 0^I 1^I \rangle \langle B_5 |\hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_4 |\hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_5,I_4} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B 1^B |\hat{g}| 0^I 1^I \rangle \langle B_5 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_4 |\hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_5,I_4} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^B 1^B |\hat{g}| 1^I 0^I \rangle \langle B_5 |\hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_4 |\hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{-} |I_0 \rangle t_{A_1} t_{B_5,I_4} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_6,I_{15})\rangle = \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^B 0^B |\hat{g}|0^I 0^I \rangle \langle B_6 |\hat{0}_\beta^- \hat{0}_\alpha^- |B_1\rangle \langle I_{15} |\hat{0}_\alpha^+ \hat{0}_\beta^+ |I_0\rangle t_{A_1} t_{B_6,I_{15}} \\ &+ \tfrac{1}{2} \sum_{I} \langle 1^B 1^B |\hat{g}|0^I 0^I \rangle \langle B_6 |\hat{1}_\beta^- \hat{1}_\alpha^- |B_1\rangle \langle I_{15} |\hat{0}_\alpha^+ \hat{0}_\beta^+ |I_0\rangle t_{A_1} t_{B_6,I_{15}} \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^B 0^B |\hat{g}|1^I 1^I \rangle \langle B_6 |\hat{0}_\beta^- \hat{0}_\alpha^- |B_1\rangle \langle I_{15} |\hat{1}_\alpha^+ \hat{1}_\beta^+ |I_0\rangle t_{A_1} t_{B_6,I_{15}} \\ &+ \tfrac{1}{2} \sum_{I} \langle 1^B 1^B |\hat{g}|1^I 1^I \rangle \langle B_6 |\hat{1}_\beta^- \hat{1}_\alpha^- |B_1\rangle \langle I_{15} |\hat{1}_\alpha^+ \hat{1}_\beta^+ |I_0\rangle t_{A_1} t_{B_6,I_{15}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9)\rangle = \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|0^B\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{12},B_9} \\ &+ \frac{-1}{4}\langle 0^A1^A|\hat{g}|1^A0^B\rangle \langle A_{12}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{12},B_9} \\ &+ \frac{-1}{4}\langle 0^A1^A|\hat{g}|0^B1^A\rangle \langle A_{12}|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{12},B_9} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|0^B1^A\rangle \langle A_{12}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|0^B1^A\rangle \langle A_{12}|\hat{0}_{\alpha}^+\hat{1}_{\beta}^+\hat{1}_{\beta}^-|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|1^A0^B\rangle \langle A_{12}|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|1^A0^B\rangle \langle A_{12}|\hat{1}_{\alpha}^+\hat{1}_{\beta}^+\hat{0}_{\beta}^-|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\langle 0^A0^B|\hat{g}|0^B0^B\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_9|\hat{0}_{\beta}^+\hat{0}_{\beta}^-\hat{0}_{\alpha}^-|B_1\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\langle 0^A0^B|\hat{g}|1^B1^B\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_9|\hat{0}_{\beta}^+\hat{1}_{\beta}^-\hat{1}_{\alpha}^-|B_1\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^B0^I\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^B0^I\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_0|\hat{0}_{\beta}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^B0^I\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_0|\hat{0}_{\beta}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^B0^I\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^B0^I\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^B0^I\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_9|\hat{0}_{\alpha}^-|B_1\rangle \langle I_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^B0^I\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_1|\hat{0}_{\alpha}^-|A_1\rangle \langle B_1|\hat{0}_{\alpha}^-|B_1\rangle \langle I_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle t_{A_{12},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^B0$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{9}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{9}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{9}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7)\rangle = \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|0^B\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle t_{A_{14},B_7} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|1^A0^B\rangle\langle A_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle t_{A_{14},B_7} \\ &+ \frac{-1}{4}\langle 0^A1^A|\hat{g}|0^B1^A\rangle\langle A_{14}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle t_{A_{14},B_7} \\ &+ \frac{-1}{2}\langle 0^A1^A|\hat{g}|0^B1^A\rangle\langle A_{14}|\hat{1}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle t_{A_{14},B_7} \\ &+ \frac{-1}{2}\langle 0^A1^A|\hat{g}|1^A0^B\rangle\langle A_{14}|\hat{1}^+_{\alpha}\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle t_{A_{14},B_7} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|0^B1^A\rangle\langle A_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle t_{A_{14},B_7} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|1^A0^B\rangle\langle A_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle t_{A_{14},B_7} \\ &+ \frac{1}{4}\langle 0^A0^B|\hat{g}|0^B0^B\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^+_{\alpha}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|B_1\rangle t_{A_{14},B_7} \\ &+ \frac{1}{2}\langle 0^A0^B|\hat{g}|0^B0^B\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^+_{\alpha}\hat{1}^-_{\beta}\hat{1}^-_{\alpha}|B_1\rangle t_{A_{14},B_7} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^B0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{14},B_7} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^B1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{14},B_7} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^I0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{14},B_7} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^I0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{14},B_7} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^B0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{14},B_7} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^B0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{A_{14},B_7} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^B0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{A_{14},B_7} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|0^B0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{10})\rangle = \\ &+ \tfrac{1}{2}\langle 0^A|\hat{h}|1^B\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{12},B_{10}} \\ &+ \tfrac{-1}{4}\langle 0^A1^A|\hat{g}|1^A1^B\rangle\langle A_{12}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{12},B_{10}} \\ &+ \tfrac{-1}{4}\langle 0^A1^A|\hat{g}|1^B1^A\rangle\langle A_{12}|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{12},B_{10}} \\ &+ \tfrac{1}{4}\langle 0^A1^A|\hat{g}|1^B1^A\rangle\langle A_{12}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{12},B_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{A}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{4}\langle 0^{A}1^{A}|\hat{g}|1^{A}1^{B}\rangle\langle A_{12}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{A}1^{B}\rangle\langle A_{12}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|0^{B}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{B}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\sum_{i}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}|A_{1}\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8)\rangle = \\ &+ \frac{1}{2}\langle 0^A|\hat{h}|1^B\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle t_{A_{14},B_8} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|1^A1^B\rangle\langle A_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle t_{A_{14},B_8} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|1^B1^A\rangle\langle A_{14}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle t_{A_{14},B_8} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|1^B1^A\rangle\langle A_{14}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|1^B1^A\rangle\langle A_{14}|\hat{1}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|1^B1^A\rangle\langle A_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle t_{A_{14},B_8} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|1^B1^A\rangle\langle A_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle t_{A_{14},B_8} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|1^A1^B\rangle\langle A_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\langle 0^A0^B|\hat{g}|0^B1^B\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\langle 0^A1^B|\hat{g}|1^B1^B\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^B0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A1^B|\hat{g}|0^I0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A1^B|\hat{g}|0^I0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^B0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^B0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^B0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{A_{14},B_8} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^B1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9)\rangle = \\ &+ \frac{1}{2}\langle 1^A|\hat{h}|0^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{11},B_9} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|0^A0^B\rangle\langle A_{11}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{11},B_9} \\ &+ \frac{1}{4}\langle 0^A0^A|\hat{g}|1^A0^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|1^A0^B\rangle\langle A_{11}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{1}_{\beta}^-|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|1^A0^B\rangle\langle A_{11}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{1}_{\beta}^-|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{11},B_9} \\ &+ \frac{1}{4}\langle 0^A0^A|\hat{g}|1^A0^B\rangle\langle A_{11}|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{11},B_9} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|0^A0^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+\hat{0}_{\beta}^+\hat{0}_{\alpha}^-|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\langle 1^A0^B|\hat{g}|0^A0^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\beta}^+\hat{0}_{\beta}^-\hat{0}_{\alpha}^-|B_1\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\langle 1^A0^B|\hat{g}|0^B0^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\beta}^+\hat{0}_{\beta}^-\hat{0}_{\alpha}^-|B_1\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\langle 1^A0^B|\hat{g}|0^B0^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\beta}^+\hat{1}_{\beta}^-\hat{1}_{\alpha}^-|B_1\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^I|\hat{g}|0^B0^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_0|\hat{0}_{\beta}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^I|\hat{g}|0^B0^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A1^I|\hat{g}|0^B1^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_0|\hat{1}_{\beta}^+\hat{1}_{\alpha}^-|I_0\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A1^I|\hat{g}|0^B1^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_0|\hat{1}_{\beta}^+\hat{1}_{\alpha}^-|I_0\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|0^I0^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_0|\hat{1}_{\beta}^+\hat{1}_{\alpha}^-|I_0\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|0^I0^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_0|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle t_{A_{11},B_9} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|\hat{g}|1^I1^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_0|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{7})\rangle = \\ &+ \frac{1}{2}\langle 1^{A}|\hat{h}|0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{7}} \\ &+ \frac{-1}{2}\langle 0^{A}0^{A}|\hat{g}|1^{A}0^{B}\rangle\langle A_{13}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{7}} \\ &+ \frac{-1}{4}\langle 0^{A}1^{A}|\hat{g}|0^{A}0^{B}\rangle\langle A_{13}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{7}} \\ &+ \frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{A}0^{B}\rangle\langle A_{13}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{7}} \\ &+ \frac{-1}{4}\langle 0^{A}0^{A}|\hat{g}|1^{A}0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{7}} \\ &+ \frac{1}{4}\langle 0^{A}0^{A}|\hat{g}|1^{A}0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{7}} \\ &+ \frac{1}{4}\langle 0^{A}1^{A}|\hat{g}|0^{A}0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{7}} \\ &+ \frac{1}{4}\langle 0^{A}1^{A}|\hat{g}|0^{A}0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{7}} \\ &+ \frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|0^{B}0^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{13},B_{7}} \end{split}$$

$$\begin{split} & + \frac{-1}{2} \langle 1^A 0^B | \hat{g} | 1^B 1^B \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle B_7 | \hat{0}^+_{\alpha} \hat{1}^-_{\beta} \hat{1}^-_{\alpha} | B_1 \rangle t_{A_{13}, B_7} \\ & + \frac{1}{2} \sum_I \langle 1^A 0^I | \hat{g} | 0^B 0^I \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle B_7 | \hat{0}^-_{\beta} | B_1 \rangle \langle I_0 | \hat{0}^+_{\beta} \hat{0}^-_{\beta} | I_0 \rangle t_{A_{13}, B_7} \\ & + \frac{1}{2} \sum_I \langle 1^A 1^I | \hat{g} | 0^B 1^I \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle B_7 | \hat{0}^-_{\beta} | B_1 \rangle \langle I_0 | \hat{1}^+_{\beta} \hat{1}^-_{\beta} | I_0 \rangle t_{A_{13}, B_7} \\ & + \frac{-1}{2} \sum_I \langle 1^A 0^B | \hat{g} | 0^I 0^I \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle B_7 | \hat{0}^-_{\beta} | B_1 \rangle \langle I_0 | \hat{0}^+_{\beta} \hat{0}^-_{\beta} | I_0 \rangle t_{A_{13}, B_7} \\ & + \frac{-1}{2} \sum_I \langle 1^A 0^B | \hat{g} | 1^I 1^I \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle B_7 | \hat{0}^-_{\beta} | B_1 \rangle \langle I_0 | \hat{1}^+_{\beta} \hat{1}^-_{\beta} | I_0 \rangle t_{A_{13}, B_7} \\ & + \frac{1}{2} \sum_I \langle 1^A 0^I | \hat{g} | 0^B 0^I \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle B_7 | \hat{0}^-_{\beta} | B_1 \rangle \langle I_0 | \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} | I_0 \rangle t_{A_{13}, B_7} \\ & + \frac{1}{2} \sum_I \langle 1^A 1^I | \hat{g} | 0^B 1^I \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle B_7 | \hat{0}^-_{\beta} | B_1 \rangle \langle I_0 | \hat{1}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle t_{A_{13}, B_7} \\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{10})\rangle = \\ &+ \frac{1}{2}\langle 1^A|\hat{h}|1^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|0^A1^B\rangle\langle A_{11}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{4}\langle 0^A0^A|\hat{g}|1^A1^B\rangle\langle A_{11}|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|1^A1^B\rangle\langle A_{11}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{1}_{\beta}^-|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|1^A1^B\rangle\langle A_{11}|\hat{0}_{\alpha}^+\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{4}\langle 0^A0^A|\hat{g}|1^A1^B\rangle\langle A_{11}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{4}\langle 0^A1^A|\hat{g}|0^A1^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|0^A1^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+\hat{0}_{\beta}^+\hat{0}_{\beta}^-|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\langle 1^A0^B|\hat{g}|0^B1^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\beta}^+\hat{0}_{\beta}^-\hat{0}_{\alpha}^-|B_1\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\langle 1^A0^B|\hat{g}|1^B1^B\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\beta}^+\hat{1}_{\beta}^-\hat{1}_{\alpha}^-|B_1\rangle\langle I_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^I|\hat{g}|1^B0^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^I|\hat{g}|1^B0^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A1^I|\hat{g}|1^B1^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_0|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A1^B|\hat{g}|0^I0^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A1^B|\hat{g}|0^I0^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_0|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle t_{A_{11},B_{10}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A1^B|\hat{g}|0^I0^I\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_0|\hat{1}_{\alpha}^+|A_1\rangle\langle I_0|\hat{0}_{\alpha$$

$$\langle (A_1, B_1) | \hat{H} | (A_{13}, B_8) \rangle =$$

$$+ \frac{1}{2} \langle 1^A | \hat{h} | 1^B \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle B_8 | \hat{1}^-_{\beta} | B_1 \rangle t_{A_{13}, B_8}$$

$$\begin{split} &+\frac{-1}{2}\langle 0^{A}0^{A}|\hat{g}|1^{A}1^{B}\rangle\langle A_{13}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\alpha}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{8}} \\ &+\frac{-1}{4}\langle 0^{A}1^{A}|\hat{g}|0^{A}1^{B}\rangle\langle A_{13}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{8}} \\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{A}1^{B}\rangle\langle A_{13}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{8}} \\ &+\frac{-1}{4}\langle 0^{A}0^{A}|\hat{g}|1^{A}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{8}} \\ &+\frac{1}{4}\langle 0^{A}0^{A}|\hat{g}|1^{A}1^{B}\rangle\langle A_{13}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{8}} \\ &+\frac{1}{4}\langle 0^{A}0^{A}|\hat{g}|1^{A}1^{B}\rangle\langle A_{13}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{8}} \\ &+\frac{1}{4}\langle 0^{A}1^{A}|\hat{g}|0^{A}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{13},B_{8}} \\ &+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|0^{B}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{13},B_{8}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{B}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{8}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{8}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{8}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{8}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{8}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{8}} \\ &+\frac{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12})\rangle = \\ &+ \frac{-1}{2}\langle 0^A|\hat{h}|0^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+|B_1\rangle t_{A_9,B_{12}} \\ &+ \frac{-1}{2}\langle 0^A0^A|\hat{g}|0^A0^B\rangle\langle A_9|\hat{0}_\beta^+\hat{0}_\beta^-\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+|B_1\rangle t_{A_9,B_{12}} \\ &+ \frac{-1}{2}\langle 0^A1^A|\hat{g}|1^A0^B\rangle\langle A_9|\hat{0}_\beta^+\hat{1}_\beta^-\hat{1}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+|B_1\rangle t_{A_9,B_{12}} \\ &+ \frac{-1}{4}\langle 0^A1^B|\hat{g}|0^B1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+\hat{1}_\alpha^+\hat{1}_\alpha^-|B_1\rangle t_{A_9,B_{12}} \\ &+ \frac{-1}{2}\langle 0^A1^B|\hat{g}|0^B1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+\hat{1}_\beta^+\hat{1}_\beta^-|B_1\rangle t_{A_9,B_{12}} \\ &+ \frac{-1}{4}\langle 0^A0^B|\hat{g}|1^B1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{1}_\alpha^+\hat{0}_\alpha^+\hat{1}_\alpha^-|B_1\rangle t_{A_9,B_{12}} \\ &+ \frac{-1}{2}\langle 0^A0^B|\hat{g}|1^B1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{1}_\alpha^+\hat{1}_\beta^+\hat{0}_\beta^-|B_1\rangle t_{A_9,B_{12}} \\ &+ \frac{1}{4}\langle 0^A0^B|\hat{g}|1^B1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+\hat{1}_\alpha^+\hat{1}_\alpha^-|B_1\rangle t_{A_9,B_{12}} \\ &+ \frac{1}{4}\langle 0^A1^B|\hat{g}|0^B1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+\hat{1}_\alpha^+\hat{1}_\alpha^-|B_1\rangle t_{A_9,B_{12}} \\ &+ \frac{1}{4}\langle 0^A1^B|\hat{g}|0^B1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{A_9,B_{12}} \\ &+ \frac{-1}{2}\sum_I\langle 0^A0^I|\hat{g}|0^B0^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+|B_1\rangle\langle I_0|\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_9,B_{12}} \\ &+ \frac{-1}{2}\sum_I\langle 0^A1^I|\hat{g}|0^B1^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+|B_1\rangle\langle I_0|\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_9,B_{12}} \\ &+ \frac{-1}{2}\sum_I\langle 0^A1^I|\hat{g}|0^B1^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle A_1|\hat{0}_\alpha^-|A_1\rangle\langle A_1|\hat{0}_\alpha^-|A_1\rangle\langle A_1|\hat{0}_\alpha^-|A_1\rangle\langle A_1|\hat{0}_\alpha^-|A_1\rangle\langle A_1|\hat{0}_\alpha^-|A_1\rangle\langle A_1|\hat{0}_\alpha^-|A_1\rangle\langle A_1|\hat{0}_\alpha^-|A_1\rangle\langle A_1|\hat{0}_\alpha^-|A_1$$

$$\begin{split} &+ \frac{-1}{2} \sum_{I} \langle 0^{A} 1^{I} | \hat{g} | 0^{B} 1^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{12} | \hat{0}_{\alpha}^{+} | B_{1} \rangle \langle I_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle t_{A_{9},B_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A} 0^{B} | \hat{g} | 0^{I} 0^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{12} | \hat{0}_{\alpha}^{+} | B_{1} \rangle \langle I_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle t_{A_{9},B_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A} 0^{B} | \hat{g} | 1^{I} 1^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{12} | \hat{0}_{\alpha}^{+} | B_{1} \rangle \langle I_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{A_{9},B_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14})\rangle = \\ &+ \frac{-1}{2}\langle 0^A|\hat{h}|0^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|0^A0^B\rangle\langle A_7|\hat{0}_\alpha^+\hat{0}_\beta^-\hat{0}_\alpha^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|1^A0^B\rangle\langle A_7|\hat{0}_\alpha^+\hat{1}_\beta^-\hat{1}_\alpha^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{4}\langle 0^A1^B|\hat{g}|0^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+\hat{1}_\beta^+\hat{1}_\beta^-|B_1\rangle t_{A_7,B_{14}} \\ &+ \frac{-1}{4}\langle 0^A0^B|\hat{g}|1^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{1}_\beta^+\hat{0}_\beta^+\hat{1}_\beta^-|B_1\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{4}\langle 0^A0^B|\hat{g}|1^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+\hat{1}_\beta^+\hat{1}_\beta^-|B_1\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{4}\langle 0^A1^B|\hat{g}|0^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{1}_\beta^+\hat{0}_\beta^+\hat{1}_\beta^-|B_1\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\langle 0^A1^B|\hat{g}|0^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{1}_\alpha^+\hat{0}_\beta^+\hat{1}_\alpha^-|B_1\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\langle 0^A0^B|\hat{g}|1^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{1}_\alpha^+\hat{1}_\beta^+\hat{0}_\alpha^-|B_1\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\langle 0^A0^B|\hat{g}|1^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{1}_\alpha^+\hat{1}_\beta^+\hat{0}_\alpha^-|B_1\rangle\langle I_0|\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\sum_I\langle 0^A0^I|\hat{g}|0^B1^I\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_0|\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\sum_I\langle 0^A0^B|\hat{g}|1^I1^I\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_0|\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\sum_I\langle 0^A0^B|\hat{g}|1^I1^I\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_0|\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\sum_I\langle 0^A0^B|\hat{g}|1^I1^I\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\sum_I\langle 0^A0^B|\hat{g}|1^I1^I\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\sum_I\langle 0^A0^I|\hat{g}|0^B0^I\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\sum_I\langle 0^A0^I|\hat{g}|0^B0^I\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{A_7,B_{14}} \\ &+ \frac{1}{2}\sum_I\langle 0^A1^I|\hat{g}|0^B1^I\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_1^I|\hat{0}_\beta^-|A_1\rangle\langle B_1^I|\hat{0}_\beta^+|B_1\rangle\langle I_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{12})\rangle = \\ &+ \frac{-1}{2}\langle 1^A|\hat{h}|0^B\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle t_{A_{10},B_{12}} \\ &+ \frac{-1}{2}\langle 0^A0^A|\hat{g}|1^A0^B\rangle\langle A_{10}|\hat{1}_{\beta}^+\hat{0}_{\beta}^-\hat{0}_{\alpha}^-|A_1\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle t_{A_{10},B_{12}} \\ &+ \frac{-1}{2}\langle 1^A1^A|\hat{g}|1^A0^B\rangle\langle A_{10}|\hat{1}_{\beta}^+\hat{1}_{\beta}^-\hat{1}_{\alpha}^-|A_1\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle t_{A_{10},B_{12}} \\ &+ \frac{-1}{4}\langle 1^A1^B|\hat{g}|0^B1^B\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle B_{12}|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|B_1\rangle t_{A_{10},B_{12}} \\ &+ \frac{-1}{2}\langle 1^A1^B|\hat{g}|0^B1^B\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle B_{12}|\hat{0}_{\alpha}^+\hat{1}_{\beta}^+\hat{1}_{\beta}^-|B_1\rangle t_{A_{10},B_{12}} \\ &+ \frac{-1}{2}\langle 1^A1^B|\hat{g}|0^B1^B\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle B_{12}|\hat{0}_{\alpha}^+\hat{1}_{\beta}^+\hat{1}_{\beta}^-|B_1\rangle t_{A_{10},B_{12}} \end{split}$$

$$\begin{split} & + \frac{-1}{4} \langle 1^A 0^B | \hat{g} | 1^B 1^B \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_{10},B_{12}} \\ & + \frac{-1}{2} \langle 1^A 0^B | \hat{g} | 1^B 1^B \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{A_{10},B_{12}} \\ & + \frac{1}{4} \langle 1^A 0^B | \hat{g} | 1^B 1^B \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_{10},B_{12}} \\ & + \frac{1}{4} \langle 1^A 1^B | \hat{g} | 0^B 1^B \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_{10},B_{12}} \\ & + \frac{-1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 0^B 0^I \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_{10},B_{12}} \\ & + \frac{-1}{2} \sum_{I} \langle 1^A 0^I | \hat{g} | 0^B 0^I \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_0 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle t_{A_{10},B_{12}} \\ & + \frac{-1}{2} \sum_{I} \langle 1^A 1^I | \hat{g} | 0^B 1^I \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_{10},B_{12}} \\ & + \frac{-1}{2} \sum_{I} \langle 1^A 1^I | \hat{g} | 0^B 1^I \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle t_{A_{10},B_{12}} \\ & + \frac{1}{2} \sum_{I} \langle 1^A 0^B | \hat{g} | 0^I 0^I \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_0 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle t_{A_{10},B_{12}} \\ & + \frac{1}{2} \sum_{I} \langle 1^A 0^B | \hat{g} | 0^I 0^I \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_{10},B_{12}} \\ & + \frac{1}{2} \sum_{I} \langle 1^A 0^B | \hat{g} | 0^I 0^I \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_{10},B_{12}} \\ & + \frac{1}{2} \sum_{I} \langle 1^A 0^B | \hat{g} | 0^I 0^I \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle t_{A_{10},B_{12}} \\ & + \frac{1}{2} \sum_{I} \langle 1^A 0^B | \hat{g} | 0^I 0^I \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle A_1 | \hat{1}_{\alpha}^- | A_1 \rangle \langle A_1 | \hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14})\rangle = \\ &+ \frac{-1}{2}\langle 1^A|\hat{h}|0^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|1^A0^B\rangle\langle A_8|\hat{1}^+_{\alpha}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\langle 1^A1^A|\hat{g}|1^A0^B\rangle\langle A_8|\hat{1}^+_{\alpha}\hat{1}^-_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\langle 1^A1^B|\hat{g}|0^B1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle t_{A_8,B_{14}} \\ &+ \frac{-1}{4}\langle 1^A0^B|\hat{g}|1^B1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{4}\langle 1^A0^B|\hat{g}|1^B1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{4}\langle 1^A1^B|\hat{g}|0^B1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{1}^+_{\beta}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\langle 1^A1^B|\hat{g}|0^B1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{1}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\langle 1^A0^B|\hat{g}|1^B1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{1}^+_{\alpha}\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^I|\hat{g}|0^B0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^I|\hat{g}|0^B1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|1^I1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|0^I0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|0^I0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|0^B0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|I_0\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^I|\hat{g}|0^B0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|I_0\rangle t_{A_8,B_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^A0^I|\hat{g}|0^B0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_0|\hat{0}^+_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11})\rangle = \\ &+ \frac{-1}{2}\langle 0^A|\hat{h}|1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle t_{A_9,B_{11}} \\ &+ \frac{-1}{2}\langle 0^A0^A|\hat{g}|0^A1^B\rangle\langle A_9|\hat{0}_\beta^+\hat{0}_\beta^-\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle t_{A_9,B_{11}} \\ &+ \frac{-1}{2}\langle 0^A1^A|\hat{g}|1^A1^B\rangle\langle A_9|\hat{0}_\beta^+\hat{1}_\beta^-\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle t_{A_9,B_{11}} \\ &+ \frac{-1}{2}\langle 0^A0^B|\hat{g}|0^B1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{0}_\alpha^+\hat{0}_\beta^+\hat{1}_\beta^-|B_1\rangle t_{A_9,B_{11}} \\ &+ \frac{-1}{4}\langle 0^A0^B|\hat{g}|0^B1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{0}_\alpha^+\hat{1}_\alpha^+\hat{0}_\alpha^-|B_1\rangle t_{A_9,B_{11}} \\ &+ \frac{-1}{4}\langle 0^A0^B|\hat{g}|1^B0^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+\hat{0}_\alpha^+\hat{0}_\alpha^-|B_1\rangle t_{A_9,B_{11}} \\ &+ \frac{-1}{2}\langle 0^A0^B|\hat{g}|1^B0^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+\hat{0}_\alpha^+\hat{0}_\alpha^-|B_1\rangle t_{A_9,B_{11}} \\ &+ \frac{1}{4}\langle 0^A0^B|\hat{g}|1^B0^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+\hat{0}_\alpha^+\hat{0}_\alpha^-|B_1\rangle t_{A_9,B_{11}} \\ &+ \frac{1}{4}\langle 0^A0^B|\hat{g}|0^B1^B\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+\hat{0}_\alpha^+\hat{0}_\alpha^-|B_1\rangle t_{A_9,B_{11}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^B0^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{A_9,B_{11}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^A0^I|\hat{g}|1^B0^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{1}_\alpha^+\hat{1}_\alpha^-|I_0\rangle t_{A_9,B_{11}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^B1^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{1}_\beta^+\hat{1}_\alpha^-|I_0\rangle t_{A_9,B_{11}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^B1^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{1}_\beta^+\hat{1}_\alpha^-|I_0\rangle t_{A_9,B_{11}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^A1^I|\hat{g}|1^B1^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{1}_\beta^+\hat{1}_\alpha^-|I_0\rangle t_{A_9,B_{11}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A1^B|\hat{g}|0^I0^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{1}_\alpha^+\hat{1}_\alpha^-|I_0\rangle t_{A_9,B_{11}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A1^B|\hat{g}|0^I0^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{1}_\alpha^+\hat{1}_\alpha^-|I_0\rangle t_{A_9,B_{11}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A1^B|\hat{g}|0^I0^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{1}_\alpha^+\hat{1}_\alpha^-|I_0\rangle t_{A_9,B_{11}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^A1^B|\hat{g}|0^I0^I\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{1}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13})\rangle = \\ &+ \frac{-1}{2}\langle 0^A|\hat{h}|1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{13}|\hat{1}_\beta^+|B_1\rangle t_{A_7,B_{13}} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|0^A1^B\rangle\langle A_7|\hat{0}_\beta^+\hat{0}_\beta^-\hat{0}_\alpha^-|A_1\rangle\langle B_{13}|\hat{1}_\beta^+|B_1\rangle t_{A_7,B_{13}} \\ &+ \frac{1}{2}\langle 0^A1^A|\hat{g}|1^A1^B\rangle\langle A_7|\hat{0}_\alpha^+\hat{1}_\beta^-\hat{1}_\alpha^-|A_1\rangle\langle B_{13}|\hat{1}_\beta^+|B_1\rangle t_{A_7,B_{13}} \\ &+ \frac{-1}{4}\langle 0^A0^B|\hat{g}|0^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{13}|\hat{0}_\beta^+\hat{1}_\beta^+\hat{0}_\beta^-|B_1\rangle t_{A_7,B_{13}} \\ &+ \frac{-1}{4}\langle 0^A0^B|\hat{g}|1^B0^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{13}|\hat{1}_\beta^+\hat{0}_\beta^+\hat{0}_\beta^-|B_1\rangle t_{A_7,B_{13}} \\ &+ \frac{1}{2}\langle 0^A0^B|\hat{g}|0^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{13}|\hat{0}_\alpha^+\hat{0}_\beta^+\hat{1}_\alpha^-|B_1\rangle t_{A_7,B_{13}} \\ &+ \frac{1}{4}\langle 0^A0^B|\hat{g}|1^B0^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{13}|\hat{0}_\beta^+\hat{1}_\beta^+\hat{0}_\beta^-|B_1\rangle t_{A_7,B_{13}} \\ &+ \frac{1}{2}\langle 0^A0^B|\hat{g}|1^B0^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{13}|\hat{0}_\alpha^+\hat{1}_\beta^+\hat{0}_\alpha^-|B_1\rangle t_{A_7,B_{13}} \\ &+ \frac{1}{4}\langle 0^A0^B|\hat{g}|0^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{13}|\hat{1}_\beta^+\hat{0}_\beta^+\hat{0}_\beta^-|B_1\rangle t_{A_7,B_{13}} \\ &+ \frac{1}{4}\langle 0^A0^B|\hat{g}|0^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{13}|\hat{1}_\beta^+\hat{0}_\beta^+\hat{0}_\beta^-|B_1\rangle t_{A_7,B_{13}} \\ &+ \frac{1}{4}\langle 0^A0^B|\hat{g}|0^B1^B\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{13}|\hat{1}_\beta^+\hat{0}_\beta^+\hat{0}_\beta^-|B_1\rangle t_{A_7,B_{13}} \\ \end{split}$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{7},B_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{7},B_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{7},B_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{7},B_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{7},B_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{7},B_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{11})\rangle = \\ &+ \frac{-1}{2}\langle 1^A|\hat{h}|1^B\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle t_{A_{10},B_{11}} \\ &+ \frac{-1}{2}\langle 0^A0^A|\hat{g}|1^A1^B\rangle\langle A_{10}|\hat{1}_\beta^+\hat{g}_\beta^-\hat{g}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle t_{A_{10},B_{11}} \\ &+ \frac{-1}{2}\langle 1^A1^A|\hat{g}|1^A1^B\rangle\langle A_{10}|\hat{1}_\beta^+\hat{1}_\beta^-\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle t_{A_{10},B_{11}} \\ &+ \frac{-1}{2}\langle 1^A0^B|\hat{g}|0^B1^B\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{0}_\alpha^+\hat{0}_\beta^+\hat{1}_\beta^-|B_1\rangle t_{A_{10},B_{11}} \\ &+ \frac{-1}{4}\langle 1^A0^B|\hat{g}|0^B1^B\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{0}_\alpha^+\hat{1}_\alpha^+\hat{0}_\alpha^-|B_1\rangle t_{A_{10},B_{11}} \\ &+ \frac{-1}{4}\langle 1^A0^B|\hat{g}|1^B0^B\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+\hat{0}_\alpha^+\hat{0}_\alpha^-|B_1\rangle t_{A_{10},B_{11}} \\ &+ \frac{-1}{2}\langle 1^A0^B|\hat{g}|1^B0^B\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+\hat{0}_\beta^+\hat{0}_\beta^-|B_1\rangle t_{A_{10},B_{11}} \\ &+ \frac{1}{4}\langle 1^A0^B|\hat{g}|1^B0^B\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{0}_\alpha^+\hat{1}_\alpha^+\hat{0}_\alpha^-|B_1\rangle t_{A_{10},B_{11}} \\ &+ \frac{1}{4}\langle 1^A0^B|\hat{g}|0^B1^B\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+\hat{0}_\alpha^+\hat{0}_\alpha^-|B_1\rangle t_{A_{10},B_{11}} \\ &+ \frac{1}{2}\sum_I\langle 1^A0^I|\hat{g}|1^B0^I\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{A_{10},B_{11}} \\ &+ \frac{-1}{2}\sum_I\langle 1^A0^I|\hat{g}|1^B0^I\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{1}_\alpha^+\hat{1}_\alpha^-|I_0\rangle t_{A_{10},B_{11}} \\ &+ \frac{-1}{2}\sum_I\langle 1^A1^I|\hat{g}|1^B1^I\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{1}_\beta^+\hat{1}_\beta^-|I_0\rangle t_{A_{10},B_{11}} \\ &+ \frac{-1}{2}\sum_I\langle 1^A1^I|\hat{g}|1^B1^I\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{0}_\beta^+\hat{0}_\alpha^-|I_0\rangle t_{A_{10},B_{11}} \\ &+ \frac{-1}{2}\sum_I\langle 1^A1^I|\hat{g}|1^B1^I\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{A_{10},B_{11}} \\ &+ \frac{1}{2}\sum_I\langle 1^A1^I|\hat{g}|1^B1^I\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{A_{10},B_{11}} \\ &+ \frac{1}{2}\sum_I\langle 1^A1^I|\hat{g}|1^B1^I\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle t_{A_{10},B_{11}} \\ &+ \frac{1}{2}\sum_I\langle 1^A1^I|\hat{g}|1^I\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle A_{10}|\hat{1}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_0|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13})\rangle = \\ &+ \frac{-1}{2}\langle 1^A|\hat{h}|1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle t_{A_8,B_{13}} \\ &+ \frac{1}{2}\langle 0^A0^A|\hat{g}|1^A1^B\rangle\langle A_8|\hat{1}^+_{\alpha}\hat{0}^-_{\beta}\hat{0}^-_{\alpha}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle t_{A_8,B_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{2}\langle 1^{A}1^{A}|\hat{g}|1^{A}1^{B}\rangle\langle A_{8}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle t_{A_{8},B_{13}} \\ &+\frac{-1}{4}\langle 1^{A}0^{B}|\hat{g}|0^{B}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{8},B_{13}} \\ &+\frac{-1}{4}\langle 1^{A}0^{B}|\hat{g}|1^{B}0^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|0^{B}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{4}\langle 1^{A}0^{B}|\hat{g}|1^{B}0^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{B}0^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{4}\langle 1^{A}0^{B}|\hat{g}|0^{B}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{8},B_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{15},B_6)\rangle = \\ &+ \tfrac{1}{2}\langle 0^A 0^A|\hat{g}|0^B 0^B\rangle \langle A_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|A_1\rangle \langle B_6|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_{15},B_6} \\ &+ \tfrac{1}{2}\langle 0^A 0^A|\hat{g}|1^B 1^B\rangle \langle A_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|A_1\rangle \langle B_6|\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_{15},B_6} \\ &+ \tfrac{1}{2}\langle 1^A 1^A|\hat{g}|0^B 0^B\rangle \langle A_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|A_1\rangle \langle B_6|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_{15},B_6} \\ &+ \tfrac{1}{2}\langle 1^A 1^A|\hat{g}|1^B 1^B\rangle \langle A_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|A_1\rangle \langle B_6|\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_{15},B_6} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_2,)\rangle = \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{B_2} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{B_2} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{B_2} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle t_{B_2} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle \langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{B_2} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{B_2} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{B_2} \end{split}$$

 $+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{B_{2}}$ $+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{B_{2}}$ $+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{B_{2}}$ $+ \frac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{B_2}$ $+ \frac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{B_2}$ $+ \tfrac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}_\alpha^+ \hat{1}_\alpha^- | A_1 \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle t_{B_2}$ $+ \tfrac{-1}{2} \langle 0^A 0^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{0}^+_\alpha \hat{0}^-_\alpha | A_1 \rangle \langle B_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{B_2}$ $+\frac{-1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{B_{2}}$ $+ \tfrac{-1}{2} \langle 0^A 0^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | B_1 \rangle t_{B_2}$ $+\frac{-1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{B_{2}}$ $+\frac{-1}{2}\langle 1^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{B_2}$ $+\frac{-1}{2}\langle 1^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{B_2}$ $+\frac{-1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{B_{2}}$ $+ \tfrac{-1}{2} \langle 1^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{1}_\beta^+ \hat{1}_\beta^- | A_1 \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 0^A 1^B \rangle \langle A_0 | \hat{0}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{B_2}$ $+ \tfrac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 0^A 1^B \rangle \langle A_0 | \hat{0}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{B_2}$ $+ \tfrac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{B_2}$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_3,)\rangle = \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{B_3} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle \langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{B_3} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{B_3} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle t_{B_3} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle \langle B_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{B_3} \\ &+ \tfrac{1}{2} \langle 0^A 0^B |\hat{g}|0^A 1^B \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{B_3} \\ &+ \tfrac{1}{2} \langle 1^A 0^B |\hat{g}|1^A 1^B \rangle \langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{B_3} \\ &+ \tfrac{1}{2} \langle 1^A 0^B |\hat{g}|1^A 1^B \rangle \langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle \langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{B_3} \\ &+ \tfrac{1}{2} \langle 1^A 0^B |\hat{g}|1^A 1^B \rangle \langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle \langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{B_3} \end{split}$$

 $+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{B_{3}}$ $+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{B_{3}}$ $+ \tfrac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{B_3}$ $+\frac{1}{2}\langle 1^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{B_{3}}$ $+\frac{-1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{B_{3}}$ $+ \tfrac{-1}{2} \langle 0^A 0^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{0}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{B_3}$ $+ \tfrac{-1}{2} \langle 0^A 0^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{0}^+_\alpha \hat{0}^-_\alpha | A_1 \rangle \langle B_3 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{B_3}$ $+\frac{-1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{B_{3}}$ $+ \tfrac{-1}{2} \langle 1^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{1}^+_\alpha \hat{1}^-_\alpha | A_1 \rangle \langle B_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{B_3}$ $+ \tfrac{-1}{2} \langle 1^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{1}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{B_3}$ $+\frac{-1}{2}\langle 1^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{B_3}$ $+\frac{-1}{2}\langle 1^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 0^A 1^B \rangle \langle A_0 | \hat{0}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{B_3}$ $+ \tfrac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{B_3}$ $+ \frac{1}{2} \langle 0^A 0^B | \hat{g} | 0^A 1^B \rangle \langle A_0 | \hat{0}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{B_3}$ $+ \tfrac{1}{2} \langle 1^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_0 | \hat{1}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{B_3}$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{2},)\rangle = \\ &+ \frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2}} \\ &+ \frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2}} \\ &+ \frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2}} \\ &+ \frac{1}{2}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{2}} \\ &+ \frac{1}{2}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{2}} \\ &+ \frac{1}{2}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2}} \\ &+ \frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2}} \\ &+ \frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2}} \\ &+ \frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2}} \\ &+ \frac{1}{2}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2}} \end{split}$$

$$\begin{split} & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle B_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{1}{2} \langle 0^{A} 0^{B} | \hat{g} | 1^{A} 0^{B} \rangle \langle A_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{2}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,)\rangle = \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 0^B\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 0^B\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 0^B\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 0^B\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 0^B\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 0^B\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3} \\ &+ \frac{1}{2}\langle 0^A 1^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle A_0|$$

$$\begin{split} & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | B_{1} \rangle t_{A_{3}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle B_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 0^{B} 0^{B} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{-1}{2} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{1}{2} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{B} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{1}{2} \langle 0^{A} 0^{B} | \hat{g} | 1^{A} 0^{B} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle t_{A_{3}} \\ & + \frac{1}{2} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{B} \rangle \langle A_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_2)\rangle = \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle \langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle \langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_2,B_2} \\ &+ \frac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 0^B|\hat{g}|1^A 0^B|\hat{g}|1^A 0^B|\hat{g}|1^A 0^B|\hat{g}|1^A 0^B|\hat{g}$$

 $+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{2}}$ $+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2},B_{2}}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_2,B_2}$ $+\frac{-1}{2}\langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{A_2, B_2}$ $+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{2}}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle t_{A_2, B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{A_2,B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{A_2,B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{A_2,B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{A_2,B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | A_1 \rangle \langle B_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{A_2} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_2 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_2} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{A_2} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_2}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2}}t_{B_{2}}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2}}t_{B_{2}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}^+_\alpha \hat{0}^-_\alpha | A_1 \rangle \langle B_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{A_2} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle B_2 | \hat{0}_\beta^+ \hat{1}_\beta^- | B_1 \rangle t_{A_2} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_2 | \hat{0}_\beta^+ \hat{1}_\beta^- | B_1 \rangle t_{A_2} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | B_1 \rangle t_{A_2} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_2} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle t_{A_2} t_{B_2}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_2}$ $+\frac{-1}{2}\langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{A_2} t_{B_2}$ $+\frac{-1}{2}\langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_2}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_2} t_{B_2}$ $+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{2}}t_{B_{2}}$ $+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{2}}t_{B_{2}}$ $+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2}}t_{B_{2}}$

$$\begin{split} & + \frac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_2} t_{B_2} \\ & + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{A_2} t_{B_2} \\ & + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{A_2} t_{B_2} \\ & + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{A_2} t_{B_2} \\ & + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{A_2} t_{B_2} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_2, B_3)\rangle =$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{A_2,B_3}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{3}}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{2},B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}^+_\alpha \hat{0}^-_\alpha | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_2,B_3}$ $+\frac{1}{2}\langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{A_2, B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | A_1 \rangle \langle B_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | A_1 \rangle \langle B_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{0}_\beta^+ \hat{1}_\beta^- | A_1 \rangle \langle B_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_2,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_2,B_3}$ $+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{3}}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_2,B_3}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{3}}$

 $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{3}}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{3}}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{2},B_{3}}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{2}}t_{B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | A_1 \rangle \langle B_3 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}_\beta^+ \hat{1}_\beta^- | A_1 \rangle \langle B_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | A_1 \rangle \langle B_3 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_2} t_{B_3}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2}}t_{B_{3}}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_2} t_{B_3}$ $+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{2}}t_{B_{3}}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | A_1 \rangle \langle B_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | B_1 \rangle t_{A_2} t_{B_3}$ $+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{B}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{2}}t_{B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{A_2} t_{B_3}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{2}}t_{B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{A_2} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{A_2} t_{B_3}$

$$\langle (A_1, B_1) | \hat{H} | (A_3, B_2) \rangle = \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_1 \rangle t_{A_3, B_2} \\ + \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-}$$

 $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{2}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle t_{A_3} t_{B_2}$ $+\frac{1}{2}\langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{A_3} t_{B_2}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{2}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_3 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_2 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | A_1 \rangle \langle B_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | A_1 \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_3 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_3} t_{B_2}$ $+\frac{-1}{2}\langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_3 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_3} t_{B_2}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{2}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{A_3} t_{B_2}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_2 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{A_3} t_{B_2}$ $+ \frac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_3} t_{B_2}$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_3)\rangle = \\ &+ \tfrac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_3,B_3} \\ &+ \tfrac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3,B_3} \\ &+ \tfrac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle t_{A_3,B_3} \\ &+ \tfrac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_3,B_3} \\ &+ \tfrac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle B_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_3,B_3} \\ &+ \tfrac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle B_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_3,B_3} \\ &+ \tfrac{1}{2}\langle 0^A 0^B|\hat{g}|1^A 1^B\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle B_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle t_{A_3,B_3} \end{split}$$

 $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{3}}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{3},B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle t_{A_3,B_3}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_3,B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{A_3,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | A_1 \rangle \langle B_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle t_{A_3,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | A_1 \rangle \langle B_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | B_1 \rangle t_{A_3,B_3}$ $+\frac{-1}{2}\langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | B_1 \rangle t_{A_3,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | A_1 \rangle \langle B_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle t_{A_3,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | B_1 \rangle t_{A_3,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 0^B 1^B \rangle \langle A_3 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_3,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | A_1 \rangle \langle B_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | B_1 \rangle t_{A_3,B_3}$ $+ \tfrac{-1}{2} \langle 0^A 1^A | \hat{g} | 1^B 0^B \rangle \langle A_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle B_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle t_{A_3,B_3}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | B_1 \rangle t_{A_3,B_3}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3},B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\alpha \hat{0}^-_\alpha | B_1 \rangle t_{A_3,B_3}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_3} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_3} t_{B_3}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | B_1 \rangle t_{A_3} t_{B_3}$ $+\frac{1}{2}\langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | A_1 \rangle \langle B_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle t_{A_3} t_{B_3}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{0}^+_\beta \hat{1}^-_\beta | B_1 \rangle t_{A_3} t_{B_3}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}$ $+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}$ $+ \tfrac{1}{2} \langle 0^A 0^B | \hat{g} | 1^A 1^B \rangle \langle A_3 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle B_3 | \hat{1}^+_\beta \hat{0}^-_\beta | B_1 \rangle t_{A_3} t_{B_3}$

$$\begin{split} &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{B}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|0^{B}1^{B}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{B}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{-1}{2}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{B}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle t_{A_{3}}t_{B_{3}}\\ &+\frac{1}{2}\langle 0^{A}0^{B}|\hat{g}|1^{A}1^{B}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_4,B_5)\rangle = \\ &+ \frac{-1}{2}\langle 0^A 1^A|\hat{g}|1^B 0^B\rangle \langle A_4|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|A_1\rangle \langle B_5|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_4,B_5} \\ &+ \frac{-1}{2}\langle 0^A 1^A|\hat{g}|0^B 1^B\rangle \langle A_4|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|A_1\rangle \langle B_5|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_4,B_5} \\ &+ \frac{-1}{2}\langle 0^A 1^A|\hat{g}|0^B 1^B\rangle \langle A_4|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|A_1\rangle \langle B_5|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle t_{A_4,B_5} \\ &+ \frac{-1}{2}\langle 0^A 1^A|\hat{g}|1^B 0^B\rangle \langle A_4|\hat{1}_{\alpha}^{+}\hat{0}_{\beta}^{-}|A_1\rangle \langle B_5|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle t_{A_4,B_5} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_5,B_4)\rangle = \\ &+ \frac{-1}{2}\langle 0^A 1^A|\hat{g}|1^B 0^B\rangle \langle A_5|\hat{0}^+_\beta \hat{1}^-_\alpha|A_1\rangle \langle B_4|\hat{0}^+_\alpha \hat{1}^-_\beta|B_1\rangle t_{A_5,B_4} \\ &+ \frac{-1}{2}\langle 0^A 1^A|\hat{g}|0^B 1^B\rangle \langle A_5|\hat{1}^+_\beta \hat{0}^-_\alpha|A_1\rangle \langle B_4|\hat{0}^+_\alpha \hat{1}^-_\beta|B_1\rangle t_{A_5,B_4} \\ &+ \frac{-1}{2}\langle 0^A 1^A|\hat{g}|0^B 1^B\rangle \langle A_5|\hat{0}^+_\beta \hat{1}^-_\alpha|A_1\rangle \langle B_4|\hat{1}^+_\alpha \hat{0}^-_\beta|B_1\rangle t_{A_5,B_4} \\ &+ \frac{-1}{2}\langle 0^A 1^A|\hat{g}|1^B 0^B\rangle \langle A_5|\hat{1}^+_\beta \hat{0}^-_\alpha|A_1\rangle \langle B_4|\hat{1}^+_\alpha \hat{0}^-_\beta|B_1\rangle t_{A_5,B_4} \\ &+ \frac{-1}{2}\langle 0^A 1^A|\hat{g}|1^B 0^B\rangle \langle A_5|\hat{1}^+_\beta \hat{0}^-_\alpha|A_1\rangle \langle B_4|\hat{1}^+_\alpha \hat{0}^-_\beta|B_1\rangle t_{A_5,B_4} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{6},B_{15})\rangle = \\ &+ \frac{1}{2}\langle 0^{A}0^{A}|\hat{g}|0^{B}0^{B}\rangle\langle A_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|B_{1}\rangle t_{A_{6},B_{15}} \\ &+ \frac{1}{2}\langle 1^{A}1^{A}|\hat{g}|0^{B}0^{B}\rangle\langle A_{6}|\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{15}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{+}|B_{1}\rangle t_{A_{6},B_{15}} \\ &+ \frac{1}{2}\langle 0^{A}0^{A}|\hat{g}|1^{B}1^{B}\rangle\langle A_{6}|\hat{0}_{\beta}^{-}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|B_{1}\rangle t_{A_{6},B_{15}} \\ &+ \frac{1}{2}\langle 1^{A}1^{A}|\hat{g}|1^{B}1^{B}\rangle\langle A_{6}|\hat{1}_{\beta}^{-}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{15}|\hat{1}_{\alpha}^{+}\hat{1}_{\beta}^{+}|B_{1}\rangle t_{A_{6},B_{15}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_1, J_{12}, K_9)\rangle =$ $+ \tfrac{1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 0^I 0^K \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1, I_1} t_{J_{12}, K_9}$ $+\frac{1}{12}\sum\sum\sum\sum\sum\langle 1^{I}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{12},K_{9}}$ $\sum_{i=1}^{3} \sum_{k=1}^{3} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{1}} t_{J_{12}, K_{9}}$ $\sum \sum \langle 1^{I}1^{I}|\hat{g}|0^{J}0^{K}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{12},K_{9}}$ $+ \tfrac{1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 0^I 0^K \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle \langle K_9 | \hat{0}_\alpha^- | K_0 \rangle t_{A_1} t_{B_1, I_1} t_{J_{12}, K_9}$ $+ \frac{1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{1} | \hat{1}^{+}_{\beta} \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{12} | \hat{0}^{+}_{\alpha} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{12},K_{9}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{12},K_{9}}$ $+ \frac{-1}{12} \sum \sum \sum \langle 1^I 1^I | \hat{g} | 0^J 0^K \rangle \langle I_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1,B_1} t_{I_1} t_{J_{12},K_9}$ $\sum \sum \langle 0^I 0^J | \hat{g} | 0^I 0^K \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1, B_1} t_{I_1} t_{J_{12}, K_9}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{12},K_{9}}$ $+ \frac{1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{12},K_{9}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{12},K_{9}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 1^{I} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{1}} t_{J_{12}, K_{9}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{K} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{12},K_{9}}$ $+ \tfrac{1}{12} \sum \sum \sum \langle 1^I 0^J | \hat{g} | 1^I 0^K \rangle \langle I_1 | \hat{1}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle \langle K_9 | \hat{0}_\alpha^- | K_0 \rangle t_{B_1} t_{A_1, I_1} t_{J_{12}, K_9}$ $+\frac{1}{12}\sum_{I}\sum_{\sigma}\sum_{I}\sum_{\sigma}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{12},K_{9}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{12},K_{9}}$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{12}, K_{9}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{I} 0^{K} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{12}, K_{9}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{12}, K_{9}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_1, J_{14}, K_7)\rangle =$ $+\frac{1}{12}\sum\sum\sum\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{14},K_{7}}$ $+ \frac{1}{12} \sum_{I} \sum_{K} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{1}} t_{J_{14}, K_{7}}$ $+ \frac{1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \sum_{\alpha} \langle 1^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{1} | \hat{1}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | I_{0} \rangle \langle J_{14} | \hat{0}^{+}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{14},K_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{14},K_{7}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{14},K_{7}}$ $\sum_{I} \sum_{I} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{1}} t_{J_{14}, K_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 1^{I} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{14},K_{7}} dt_{A_{1},B_{1}} dt_{A_{1},B_{1},B_{1}} dt_{A_{1},B_{1},B_{1}} dt_{A_{1},B_{1},B_{1}} dt_{A_{1},B_{1},B_{1}} dt_{A_{1},B_{1},B_{1}} dt_{A_{1},B_{1},B_{1},B_{1}} dt_{A_{1},B_{1},B_{1},B_{1},B_{1}} dt_{A_{1},B_{1},B_{1},B_{1},B_{1}} dt_{A_{1},B_{$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 0^I 0^K \rangle \langle I_1 | \hat{0}^+_\beta \hat{0}^-_\beta | I_0 \rangle \langle J_{14} | \hat{0}^+_\beta | J_0 \rangle \langle K_7 | \hat{0}^-_\beta | K_0 \rangle t_{B_1} t_{A_1,I_1} t_{J_{14},K_7}$ $+\frac{1}{12}\sum^{I}\sum^{C}\sum^{I}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{K}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{14},K_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 0^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{1}} t_{J_{14}, K_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 1^{I} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{1}} t_{J_{14}, K_{7}}$ $+\frac{1}{12}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{14},K_{7}}t_{A_{1}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{14},K_{7}}t_{A_{1}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{14},K_{7}}t_{A_{1}$ $+\frac{-1}{12}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{14},K_{7}}$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{1} | \hat{1}^{+}_{\beta} \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{14} | \hat{0}^{+}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{14}, K_{7}} t_{A_{1}} t_{A_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_1,J_{12},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|0^{I}I^{K}\rangle\langle I_{1}|\hat{\alpha}_{\sigma}^{+}\hat{\sigma}_{\sigma}^{-}|I_{0}\rangle\langle J_{12}|\hat{\sigma}_{\sigma}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\sigma}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{2},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{I}I^{K}\rangle\langle I_{1}|\hat{\alpha}_{\sigma}^{+}\hat{\sigma}_{\sigma}^{-}|I_{0}\rangle\langle J_{12}|\hat{\sigma}_{\sigma}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\sigma}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{2},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|0^{J}I^{K}\rangle\langle I_{1}|\hat{\sigma}_{\sigma}^{+}\hat{\sigma}_{\sigma}^{-}|I_{0}\rangle\langle J_{12}|\hat{\sigma}_{\sigma}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\sigma}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|0^{J}I^{K}\rangle\langle I_{1}|\hat{\sigma}_{\sigma}^{+}\hat{\sigma}_{\sigma}^{-}|I_{0}\rangle\langle J_{12}|\hat{\sigma}_{\sigma}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\sigma}^{-}|K_{0}\rangle t_{A_{1},B_{1},I_{1}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|0^{J}I^{K}\rangle\langle I_{1}|\hat{\sigma}_{\sigma}^{+}\hat{\sigma}_{\sigma}^{-}|I_{0}\rangle\langle J_{12}|\hat{\sigma}_{\sigma}^{+}|J_{0}\rangle\langle K_{10}|\hat{\sigma}_{\sigma}^{-}|K_{0}\rangle t_{A_{1},B_{1},I_{1}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|0^{J}I^{K}\rangle\langle I_{1}|\hat{\sigma}_{\sigma}^{+}\hat{\sigma}_{\sigma}^{-}|I_{0}\rangle\langle J_{12}|\hat{\sigma}_{\sigma}^{+}|J_{0}\rangle\langle K_{10}|\hat{\sigma}_{\sigma}^{-}|K_{0}\rangle t_{A_{1},B_{1},I_{1}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|$$

$$\begin{split} &\langle \langle (A_1,B_1) | \hat{H} | (A_1,B_1,I_1,J_{14},K_8) \rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J | \hat{g} | 0^I I^K \rangle \langle I_1 | \hat{0}_{\beta}^{+} \hat{0}_{\overline{\beta}} | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_0 \rangle \langle K_8 | \hat{1}_{\overline{\beta}}^{-} | K_0 \rangle t_{A_1} t_{B_1,I_1} t_{J_{14},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J | \hat{g} | 0^I I^K \rangle \langle I_1 | \hat{0}_{\alpha}^{+} \hat{0}_{\overline{\alpha}} | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_0 \rangle \langle K_8 | \hat{1}_{\overline{\beta}}^{-} | K_0 \rangle t_{A_1} t_{B_1,I_1} t_{J_{14},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 1^I I^K \rangle \langle I_1 | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_0 \rangle \langle K_8 | \hat{1}_{\overline{\beta}}^{-} | K_0 \rangle t_{A_1} t_{B_1,I_1} t_{J_{14},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J | \hat{g} | 1^J I^K \rangle \langle I_1 | \hat{0}_{\alpha}^{+} \hat{0}_{\overline{\alpha}}^{-} | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_0 \rangle \langle K_8 | \hat{1}_{\overline{\beta}}^{-} | K_0 \rangle t_{A_1} t_{B_1,I_1} t_{J_{14},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J | \hat{g} | 0^J I^K \rangle \langle I_1 | \hat{0}_{\beta}^{+} \hat{0}_{\overline{\beta}}^{-} | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_0 \rangle \langle K_8 | \hat{1}_{\overline{\beta}}^{-} | K_0 \rangle t_{A_1} t_{B_1,I_1} t_{J_{14},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J | \hat{g} | 0^J I^K \rangle \langle I_1 | \hat{0}_{\beta}^{+} \hat{0}_{\overline{\beta}}^{-} | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_0 \rangle \langle K_8 | \hat{1}_{\overline{\beta}}^{-} | K_0 \rangle t_{A_1,B_1} t_{I_1} t_{J_{14},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J | \hat{g} | 0^J I^K \rangle \langle I_1 | \hat{0}_{\alpha}^{+} \hat{0}_{\overline{\alpha}}^{-} | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_0 \rangle \langle K_8 | \hat{1}_{\overline{\beta}}^{-} | K_0 \rangle t_{A_1,B_1} t_{I_1} t_{J_{14},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 1^I I^K \rangle \langle I_1 | \hat{0}_{\alpha}^{+} \hat{0}_{\overline{\alpha}}^{-} | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_0 \rangle \langle K_8 | \hat{1}_{\overline{\beta}}^{-} | K_0 \rangle t_{A_1,B_1} t_{I_1} t_{J_14,K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 1^J I^K \rangle \langle I_1 | \hat{0}_{\alpha}^{+} \hat{0}_{\overline{\beta}}^{-} | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_0 \rangle \langle K_8 | \hat{1}_{\overline{\beta}}^{-} | K_0 \rangle t_{A_1,B_1} t_{I_1} t_{J_14,K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 1^J I^K \rangle \langle I_1 | \hat{0}_{\beta}^{+} \hat{0}_{\overline{\beta}}^{-} | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_0 \rangle \langle K_8 | \hat{1}_{\overline{\beta}}^{$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_2, J_{12}, K_9)\rangle =$$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} | 1_{\alpha} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{2}} t_{J_{12},K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{2}} t_{J_{12},K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}1^{I} | \hat{g} | 0^{K}0^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{a}_{\alpha} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{2}} t_{J_{12},K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{a}_{\alpha} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{2}} t_{J_{12},K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}0^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{a}_{\beta} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{2}} t_{J_{12},K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{a}_{\alpha} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{2}} t_{J_{12},K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{a}_{\alpha} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{12},K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{J}0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{a}_{\alpha} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2},K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{J}0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{a}_{\alpha} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{2},K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{J}0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_{12},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12} |\hat{0}_{\alpha}^{+} |J_0\rangle \langle K_9 |\hat{0}_{\alpha}^{-} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{12},K_9} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_{12} |\hat{0}_{\alpha}^{+} |J_0\rangle \langle K_9 |\hat{0}_{\alpha}^{-} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}0|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}0|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}0|\hat{g}|1^{J}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_{14},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0\rangle \langle J_{14}| \hat{0}^+_{\beta} |J_0\rangle \langle K_7| \hat{0}^-_{\beta} |K_0\rangle t_{A_1} t_{B_1,I_2} t_{J_{14},K_7} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |I_0\rangle \langle J_{14}| \hat{0}^+_{\beta} |J_0\rangle \langle K_7| \hat{0}^-_{\beta} |K_0\rangle t_{A_1} t_{B_1,I_2} t_{J_{14},K_7} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{1}^+_{\beta} \hat{0}^-_{\beta} |I_0\rangle \langle J_{14}| \hat{0}^+_{\beta} |J_0\rangle \langle K_7| \hat{0}^-_{\beta} |K_0\rangle t_{A_1} t_{B_1,I_2} t_{J_{14},K_7} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |I_0\rangle \langle J_{14}| \hat{0}^+_{\beta} |J_0\rangle \langle K_7| \hat{0}^-_{\beta} |K_0\rangle t_{A_1} t_{B_1,I_2} t_{J_{14},K_7} \end{split}$$

 $\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{14},K_{7}}$ $+\frac{-1}{12}\sum_{r}^{I}\sum_{r}^{J}\sum_{\kappa}^{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{14},K_{7}}$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 1^I 0^K \rangle \langle I_2 | \hat{0}^+_\beta \hat{1}^-_\beta | I_0 \rangle \langle J_{14} | \hat{0}^+_\beta | J_0 \rangle \langle K_7 | \hat{0}^-_\beta | K_0 \rangle t_{A_1,B_1} t_{I_2} t_{J_{14},K_7}$ $+ \frac{1}{12} \sum_{i} \sum_{j} \sum_{i} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{14},K_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 0^{I}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{14},K_{7}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{14},K_{7}}$ $+ \frac{1}{12} \sum_{I} \sum_{\alpha} \sum_{i=1}^{N} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{14}, K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{14},K_{7}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle I_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{14},K_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{14}, K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{7}}t_{A_{1}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{7}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{7}}$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_{14},K_7)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle\langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{14},K_7}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle\langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{14},K_7}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle\langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{14},K_7}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle\langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{14},K_7}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^I|\hat{g}|0^K0^J\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle\langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{14},K_7}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^I|\hat{g}|0^J0^K\rangle\langle I_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle\langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{14},K_7} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{14},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{14},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{14},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|I^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{14},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{14},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{14},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{14},K_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{14},K_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{14},K_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{J_{14},K_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{2},J_{12},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{12},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{12},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1},I_{2}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{J}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{12},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_{12},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{12},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I|\hat{g}|1^K 0^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{12},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^I 1^I|\hat{g}|0^J 1^K\rangle\langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I|\hat{g}|1^K 0^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I|\hat{g}|1^K 0^J\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{J}\sum_{L}\sum_{L}\langle 0^I 1^J|\hat{g}|1^L 1^L 0^J\rangle\langle I_3|\hat$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{I}I^{I}|\hat{g}|1^{K}0^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{I}I^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_{14},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{14},K_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{14},K_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{14},K_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{14},K_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^I|\hat{g}|1^K0^J\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{14},K_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{14},K_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_{14},K_8} \\ &+\frac{1}{12}\sum_{L}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_14|\hat{0}^+_{\beta}|J_0$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_3, J_{14}, K_8)\rangle =$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{14}, K_{8}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{14}, K_{8}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{K} \rangle \langle I_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{14}, K_{8}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{K} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{14}, K_{8}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}1^{I} | \hat{g} | 1^{K}0^{J} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{3}} t_{J_{14}, K_{8}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{3}} t_{J_{14}, K_{8}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{3}} t_{J_{14}, K_{8}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{3}} t_{J_{14}, K_{8}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{I}1^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{3}} t_{J_{14}, K_{8}} \\ & + \frac{1}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_1, J_{11}, K_9)\rangle =$ $+ \tfrac{1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 0^I 0^K \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1, I_1} t_{J_{11}, K_9}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{1}} t_{J_{11}, K_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{11},K_{9}}$ $\sum_{I} \sum_{i=1}^{K} \langle 1^{I} 1^{I} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{1}} t_{J_{11}, K_{9}}$ $\sum \sum \langle 0^I 1^J | \hat{g} | 0^I 0^K \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1, I_1} t_{J_{11}, K_9}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 1^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{1} | \hat{1}^{+}_{\beta} \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{11} | \hat{1}^{+}_{\alpha} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{11},K_{9}}$ $+ \frac{1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \sum_{\alpha} \langle 0^I 1^J | \hat{g} | 0^I 0^K \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1,B_1} t_{I_1} t_{J_{11},K_9}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{11},K_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{11},K_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 1^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{11},K_{9}}$ $+ \frac{1}{12} \sum_{} \sum_{} \sum_{} \sum_{} \langle 1^I 1^J | \hat{g} | 1^I 0^K \rangle \langle I_1 | \hat{1}^+_\beta \hat{1}^-_\beta | I_0 \rangle \langle J_{11} | \hat{1}^+_\alpha | J_0 \rangle \langle K_9 | \hat{0}^-_\alpha | K_0 \rangle t_{A_1,B_1} t_{I_1} t_{J_{11},K_9}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{11},K_{9}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{11},K_{9}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 1^I 1^I | \hat{g} | 1^J 0^K \rangle \langle I_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{B_1} t_{A_1, I_1} t_{J_{11}, K_9}$ $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_1, J_{13}, K_7)\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 0^I 0^K \rangle \langle I_1 | \hat{0}^+_\beta \hat{0}^-_\beta | I_0 \rangle \langle J_{13} | \hat{1}^+_\beta | J_0 \rangle \langle K_7 | \hat{0}^-_\beta | K_0 \rangle t_{A_1} t_{B_1, I_1} t_{J_{13}, K_7}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{7}}$ $+\frac{-1}{12}\sum_{I}^{I}\sum_{J}^{I}\sum_{I}^{K}\langle 1^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{7}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{J} | \hat{g} | 0^{I} 0^{K} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{13},K_{7}} dt_{I_{1}} t_{I_{13},K_{7}} dt_{I_{1}} d$ $+ \frac{1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \langle 0^{I} 1^{J} | \hat{g} | 0^{I} 0^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{13},K_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{13},K_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{I} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{13},K_{7}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{I} 0^{K} \rangle \langle I_{1} | \hat{0}^{+}_{\beta} \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{1}} t_{J_{13}, K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{I}\sum^{I}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{13},K_{7}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}X\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{13},K_{7}}$ $+ \frac{1}{12} \sum_{I} \sum_{\alpha} \sum_{i} \langle 1^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{1} | \hat{1}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{13},K_{7}} dt_{A_{1},I_{1}} t_{A_{13},I_{13}} dt_{A_{13},I_{13}} d$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{13},K_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{13},K_{7}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{13},K_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{13},K_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{13},K_{7}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_1, J_{11}, K_{10})\rangle =$
$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{\Lambda}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{11},K_{10}} \end{split}$$
 $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{11},K_{10}}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \sum_{\alpha} \langle 1^{I} 1^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{1}} t_{J_{11}, K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{11},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{11},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{11},K_{10}}$ $+\frac{1}{12}\sum_{}^{1}\sum_{}^{1}\sum_{}^{1}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{11},K_{10}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 0^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{11},K_{10}}$ $+ \tfrac{-1}{12} \sum \sum \sum \sum \langle 1^I 1^I | \hat{g} | 1^J 1^K \rangle \langle I_1 | \hat{1}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle \langle K_{10} | \hat{1}_\alpha^- | K_0 \rangle t_{A_1, B_1} t_{I_1} t_{J_{11}, K_{10}}$ $+\frac{1}{12}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{11},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{11},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{11},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{11},K_{10}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\left\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{11},K_{10}}\right.$ $+ \frac{-1}{12} \sum_{I}^{\circ} \sum_{I}^{\circ} \sum_{I}^{\circ} \langle 1^{I} 1^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{11},K_{10}}$ $+ \frac{1}{12} \sum_{} \sum_{} \sum_{} \sum_{} \langle 0^{I} 1^{J} | \hat{g} | 0^{I} 1^{K} \rangle \langle I_{1} | \hat{0}^{+}_{\beta} \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{11} | \hat{1}^{+}_{\alpha} | J_{0} \rangle \langle K_{10} | \hat{1}^{-}_{\alpha} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{11},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{11},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{11},K_{10}}$ $+\frac{1}{12}\sum_{I}^{I}\sum_{I}^{J}\sum_{I}^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{11},K_{10}}$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{11}, K_{10}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{11}, K_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{I} 1^{K} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{11}, K_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{11}, K_{10}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_1, J_{13}, K_8)\rangle =$
$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{8}} \end{split}$$
 $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}(1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{8}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{8}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{13},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{13},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{13},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{13},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{13},K_{8}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^I 0^I | \hat{g} | 1^J 1^K \rangle \langle I_1 | \hat{0}^+_\beta \hat{0}^-_\beta | I_0 \rangle \langle J_{13} | \hat{1}^+_\beta | J_0 \rangle \langle K_8 | \hat{1}^-_\beta | K_0 \rangle t_{A_1,B_1} t_{I_1} t_{J_{13},K_8}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 1^{I} 1^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{13},K_{8}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{J} | \hat{g} | 0^{I} 1^{K} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{13},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{13},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{13},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{13},K_{8}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\left\langle 0^{I}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{13},K_{8}}\right.$ $+ \frac{-1}{12} \sum_{I}^{\bullet} \sum_{I}^{\bullet} \sum_{K}^{\Lambda} \langle 1^{I} 1^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{1}^{+}_{\beta} \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle \langle K_{8} | \hat{1}^{-}_{\beta} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{1}} t_{J_{13},K_{8}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^I 1^J | \hat{g} | 0^I 1^K \rangle \langle I_1 | \hat{0}^+_\beta \hat{0}^-_\beta | I_0 \rangle \langle J_{13} | \hat{1}^+_\beta | J_0 \rangle \langle K_8 | \hat{1}^-_\beta | K_0 \rangle t_{A_1} t_{B_1} t_{I_1} t_{J_{13}, K_8} t_{A_1} t_{A_2} t_{A_3} t_{A_4} t_{A_5} t_{A_$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{13},K_{8}}t_{A_{1}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{13},K_{8}}$ $+\frac{1}{12}\sum_{i}^{I}\sum_{j}^{J}\sum_{i}^{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{13},K_{8}}$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{13}, K_{8}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{1}} t_{J_{13}, K_{8}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_2, J_{11}, K_9)\rangle =$ $+ \tfrac{1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 1^I 0^K \rangle \langle I_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1, I_2} t_{J_{11}, K_9}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{11},K_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{11},K_{9}}$ $+\frac{-1}{12}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{9}|\hat{0}^{-}_{\alpha}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{11},K_{9}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{I} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{2}} t_{J_{11}, K_{9}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{2}} t_{J_{11}, K_{9}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{2}} t_{J_{11}, K_{9}}$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 1^I 0^K \rangle \langle I_2 | \hat{1}^+_\beta \hat{0}^-_\beta | I_0 \rangle \langle J_{11} | \hat{1}^+_\alpha | J_0 \rangle \langle K_9 | \hat{0}^-_\alpha | K_0 \rangle t_{A_1,B_1} t_{I_2} t_{J_{11},K_9}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{11},K_{9}}$ $+ \tfrac{1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 1^I 0^K \rangle \langle I_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{B_1} t_{A_1, I_2} t_{J_{11}, K_9}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{i=1}^{K} \langle 0^{I} 1^{I} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{11}, K_{9}}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{11}, K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{C}\sum^{I}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{11},K_{9}}$ $+ \frac{-1}{12} \sum_{I=1}^{\infty} \sum_{I=1}^{\infty} \langle 0^I 1^I | \hat{g} | 0^K 1^J \rangle \langle I_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1} t_{I_2} t_{J_{11}, K_9}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{11}, K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{11},K_{9}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{11},K_{9}}$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,J_3,J_{11},K_9)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{J_{11},K_9} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{J_{11},K_9} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{J_{11},K_9} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^J0^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{J_{11},K_9} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{J_{11},K_9} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{J_{11},K_9} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1,B_1}t_{J_3}t_{J_{11},K_9} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1,A_1,A_1,A_1,A_1,A_1,A_1} \\ &+\frac{1}{12}\sum$$

$$\begin{split} &\langle (A_1,B_1)|H|\langle (A_1,B_1,I_2,J_{13},K_7)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{0}_\beta^+\hat{i}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{0}_\beta^+\hat{i}_\alpha^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{1}_\beta^+\hat{0}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^I|\hat{g}|0^KI^J\rangle\langle I_2|\hat{0}_\beta^+\hat{1}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{0}_\beta^+\hat{1}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{0}_\alpha^+\hat{0}_\alpha^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K\rangle\langle I_2|\hat{0}_\beta^+\hat{0}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{A_1,I_2}t_{J_{13},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^II^J|\hat{g}|1^I0^K$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_{13},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 0^K \rangle \langle I_3 |\hat{0}^+_\beta \hat{1}^-_\beta |I_0\rangle \langle J_{13} |\hat{1}^+_\beta |J_0\rangle \langle K_7 |\hat{0}^-_\beta |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{13},K_7} \end{split}$$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{X} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle k_{A_{1}} t_{B_{1},I_{3}} t_{J_{13},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{X} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{3}} t_{J_{13},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{X} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{3}} t_{J_{13},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{X} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{3}} t_{J_{13},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{X} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1},I_{3}} t_{J_{13},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{X} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} t_{J_{13},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{X} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} t_{J_{13},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{X} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{X} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{3},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{X} \langle 0^{I}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_{11},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^{+} |J_0\rangle \langle K_{10} |\hat{1}_{\alpha}^{-} |K_0\rangle t_{A_1} t_{B_1,I_2} t_{J_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^{+} |J_0\rangle \langle K_{10} |\hat{1}_{\alpha}^{-} |K_0\rangle t_{A_1} t_{B_1,I_2} t_{J_{11},K_{10}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 1^K 1^J \rangle \langle I_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^{+} |J_0\rangle \langle K_{10} |\hat{1}_{\alpha}^{-} |K_0\rangle t_{A_1} t_{B_1,I_2} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_{11},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0\rangle \langle J_{11}| \hat{1}_{\alpha}^+ |J_0\rangle \langle K_{10}| \hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}| \hat{1}_{\alpha}^+ |J_0\rangle \langle K_{10}| \hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{11},K_{10}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 1^K 1^J \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0\rangle \langle J_{11}| \hat{1}_{\alpha}^+ |J_0\rangle \langle K_{10}| \hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{11},K_{10}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 1^J 1^K \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}| \hat{1}_{\alpha}^+ |J_0\rangle \langle K_{10}| \hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0\rangle \langle J_{11}| \hat{1}_{\alpha}^+ |J_0\rangle \langle K_{10}| \hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 0^{I}I^{J}|\hat{g}|I^{I}I^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{g}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}I^{J}|\hat{g}|I^{I}I^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}I^{J}|\hat{g}|I^{I}I^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}I^{I}|\hat{g}|I^{K}I^{J}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}I^{I}|\hat{g}|I^{J}I^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}I^{J}|\hat{g}|I^{J}I^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}I^{J}|\hat{g}|I^{J}I^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}I^{J}|\hat{g}|I^{J}I^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}I^{J}|\hat{g}|I^{J}I^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}I^{J}|\hat{g}|I^{J}I^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}I^{J}|\hat{g}|I^{J}I^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_{13},K_8)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle\langle K_8|\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle\langle K_8|\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle\langle K_8|\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle\langle K_8|\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I|\hat{g}|1^K 1^J\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle\langle K_8|\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I|\hat{g}|1^J 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle\langle K_8|\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|1^J 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle\langle K_8|\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|1^J 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle\langle K_8|\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_{13},K_8} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_{13},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^{+} |J_0\rangle \langle K_8| \hat{1}_{\beta}^{-} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{13},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^{+} |J_0\rangle \langle K_8| \hat{1}_{\beta}^{-} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{13},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^{+} |J_0\rangle \langle K_8| \hat{1}_{\beta}^{-} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{13},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^{+} |J_0\rangle \langle K_8| \hat{1}_{\beta}^{-} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{13},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 1^K 1^J \rangle \langle I_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^{+} |J_0\rangle \langle K_8| \hat{1}_{\beta}^{-} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_{13},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^J 1^K \rangle \langle I_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^{+} |J_0\rangle \langle K_8| \hat{1}_{\beta}^{-} |K_0\rangle t_{A_1,B_1} t_{I_3} t_{J_{13},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^{+} |J_0\rangle \langle K_8| \hat{1}_{\beta}^{-} |K_0\rangle t_{A_1,B_1} t_{I_3} t_{J_{13},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^{+} |J_0\rangle \langle K_8| \hat{1}_{\beta}^{-} |K_0\rangle t_{A_1,B_1} t_{I_3} t_{J_{13},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^{+} |J_0\rangle \langle K_8| \hat{1}_{\beta}^{-} |K_0\rangle t_{A_1,B_1} t_{I_3} t_{J_{13},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^{+} |J_0\rangle \langle K_8| \hat{1}_{\beta}^{-} |K_0\rangle t_{A_1,B_1} t_{I_3} t_{J_{13},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_{13}| \hat{1}_{\beta}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{13},K_{8}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_1,K_9)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}|0^J 0^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{12},K_9} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J |\hat{g}|1^J 0^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}|0^K 0^J \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}|0^K 0^J \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J |\hat{g}|0^K 1^J \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J |\hat{g}|0^K 1^J \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{1}_{\beta}^+\hat{1}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}|0^K 0^J \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}|0^J 0^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}|0^K 0^J \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}|0^K 0^J \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{12},K_9} \\ &+ \frac{1}{12}\sum_{L}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}|0^K 0^J \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{12},K_9} \\ &+ \frac{1}{12}\sum_{L}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}|0^K 0^J \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle$$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{1}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{1}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{1}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{1}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{1}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{1}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{1}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{1}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{1}} t$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_1,K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|0^J 0^K\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{14},K_7} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|1^J 0^K\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{14},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|0^K 0^J\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{14},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{14},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|0^K 0^J\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{14},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|0^K 1^J\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{14},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|0^K 0^J\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{14},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|0^K 0^J\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{14},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|0^K 0^J\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{14},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|0^K 0^J\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{14},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|0^K 0^J\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{14},K_7} \\ &+ \frac{1}{12}\sum_{L}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|0^K 0^J\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle \langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_$$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{1}} t_{I_{14},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{1}} t_{I_{14},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{1}} t_{I_{14},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{1}} t_{I_{14},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{1}} t_{I_{14},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{1}} t_{I_{14},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{1}} t_{I_{14},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{1}} t_{I_{14},K_{7}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{1}} t_{I_{14},$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_1, K_{10})\rangle =$ $+\frac{-1}{12}\sum\sum\sum\sum\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{12},K_{10}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{1}} t_{I_{12}, K_{10}}$ $+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 0^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{1}} t_{I_{12}, K_{10}}$ $\sum_{I} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 0^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{1}} t_{I_{12}, K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{I}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{12},K_{10}}$ $+ \frac{1}{12} \sum_{i} \sum_{j} \sum_{i} \sum_{j} \langle 0^{I} 1^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{1}} t_{I_{12},K_{10}}$ $+\frac{-1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{12},K_{10}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{12},K_{10}}$ $+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 0^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{1}} t_{I_{12},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{12},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{I}\sum^{I}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{12},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{12},K_{10}}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \sum_{\alpha} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{1}} t_{I_{12}, K_{10}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{12},K_{10}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{12},K_{10}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{12},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{12},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}|\hat{g}|1^{K}1^{J}|\hat{g}|1^{J}|1^{J}|1^$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_1, K_8)\rangle =$ $+ \tfrac{-1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 0^J 1^K \rangle \langle I_{14} | \hat{0}^+_\beta | I_0 \rangle \langle J_1 | \hat{0}^+_\beta \hat{0}^-_\beta | J_0 \rangle \langle K_8 | \hat{1}^-_\beta | K_0 \rangle t_{A_1} t_{B_1,J_1} t_{I_{14},K_8}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{14},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{14},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{14},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{14},K_{8}}$ $+ \tfrac{1}{12} \sum \sum \sum \left\langle 0^I 1^J | \hat{g} | 1^K 1^J \right\rangle \left\langle I_{14} | \hat{0}^+_\beta | I_0 \right\rangle \left\langle J_1 | \hat{1}^+_\alpha \hat{1}^-_\alpha | J_0 \right\rangle \left\langle K_8 | \hat{1}^-_\beta | K_0 \right\rangle t_{A_1} t_{B_1, J_1} t_{I_{14}, K_8}$ $+ \tfrac{-1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 0^J 1^K \rangle \langle I_{14} | \hat{0}^+_\beta | I_0 \rangle \langle J_1 | \hat{0}^+_\beta \hat{0}^-_\beta | J_0 \rangle \langle K_8 | \hat{1}^-_\beta | K_0 \rangle t_{A_1,B_1} t_{J_1} t_{I_{14},K_8}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{J} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{1}} t_{I_{14},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{14},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{14},K_{8}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 0^{J} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{1} | \hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{8} | \hat{1}^{-}_{\beta} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{1}} t_{I_{14},K_{8}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{14},K_{8}}$ $+\frac{-1}{12}\sum_{}^{1}\sum_{}^{1}\sum_{}^{1}\sum_{}^{1}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{14},K_{8}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^I 1^J | \hat{g} | 1^J 1^K \rangle \langle I_{14} | \hat{0}^+_\beta | I_0 \rangle \langle J_1 | \hat{1}^+_\beta \hat{1}^-_\beta | J_0 \rangle \langle K_8 | \hat{1}^-_\beta | K_0 \rangle t_{B_1} t_{A_1,J_1} t_{I_{14},K_8}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{14},K_{8}}$ $+\frac{1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{14},K_{8}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 0^{J} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{1} | \hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{8} | \hat{1}^{-}_{\beta} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{1}} t_{I_{14},K_{8}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{+$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_2, K_9)\rangle =$ $+ \frac{-1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 1^J 0^K \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_{12}, K_9}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{12},K_{9}}$ $\sum^{3} \sum^{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{2}} t_{I_{12}, K_{9}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum_{I}\sum_{\alpha}\sum_{\alpha}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{12},K_{9}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{12}, K_{9}}$ $+ \tfrac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{12}, K_{9}}$ $+ \frac{1}{12} \sum_{\alpha} \sum_{\alpha} \sum_{\alpha} \langle 0^I 0^J | \hat{g} | 0^K 1^J \rangle \langle I_{12} | \hat{0}^+_{\alpha} | I_0 \rangle \langle J_2 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | J_0 \rangle \langle K_9 | \hat{0}^-_{\alpha} | K_0 \rangle t_{B_1} t_{A_1, J_2} t_{I_{12}, K_9}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{M}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{12},K_{9}}$ $+\frac{-1}{12}\sum_{i=1}^{J}\sum_{j=1}^{K}\sum_{i=1}^{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{12},K_{9}}$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{12}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{12}, K_{9}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_3, K_9)\rangle =$
$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{3}} t_{I_{12},K_{9}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{3}} t_{I_{12},K_{9}} \end{split}$$
 $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{\Lambda}\sum_{\alpha}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{12},K_{9}}$ $\sum_{i=1}^{J} \sum_{j=1}^{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{12}, K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{12},K_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{12},K_{9}}$ $+ \frac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{12} | \hat{0}^{+}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{3}} t_{I_{12},K_{9}}$ $\sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{3}} t_{I_{12}, K_{9}}$ $\sum_{I} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{3}} t_{I_{12}, K_{9}}$ $\sum \sum \sum \langle 0^I 0^J | \hat{g} | 0^K 1^J \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1, B_1} t_{J_3} t_{I_{12}, K_9}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{12},K_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{12},K_{9}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{12},K_{9}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{3}} t_{I_{12}, K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{12},K_{9}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{3}} t_{I_{12}, K_{9}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{12},K_{9}}$ $+\frac{1}{12}\sum_{I}\sum_{\sigma}\sum_{i=1}^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{12},K_{9}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{12},K_{9}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_2, K_7)\rangle =$ $+ \tfrac{-1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 1^J 0^K \rangle \langle I_{14} | \hat{0}^+_\beta | I_0 \rangle \langle J_2 | \hat{0}^+_\beta \hat{1}^-_\beta | J_0 \rangle \langle K_7 | \hat{0}^-_\beta | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_{14}, K_7}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{14},K_{7}}$ $+\frac{1}{12}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{14},K_{7}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{14},K_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{14},K_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{2}} t_{I_{14}, K_{7}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{0}^{+}_{\beta} \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{2}} t_{I_{14}, K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{14},K_{7}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{14},K_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{j} \sum_{i} \sum_{j} \sum_{i} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{0}^{+}_{\beta} \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{14},K_{7}}$ $+\frac{-1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{14},K_{7}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{0}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{14}, K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{14},K_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{14},K_{7}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J | \hat{g} | 0^J 0^K \rangle \langle I_{14} | \hat{0}^+_\beta | I_0 \rangle \langle J_2 | \hat{1}^+_\beta \hat{0}^-_\beta | J_0 \rangle \langle K_7 | \hat{0}^-_\beta | K_0 \rangle t_{A_1} t_{B_1} t_{J_2} t_{I_{14}, K_7} + t_{A_1} t_{A_2} t_{A_3} t_{A_4} t_{A_5} t_{A_5}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{14},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{14},K_{7}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{\Lambda}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{14},K_{7}}$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{14}, K_{7}} dt_{A_{1}} dt$$

$$\begin{split} &\langle \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_3,K_7)\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|1^J O^K\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{14},K_7} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J O^K\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\alpha^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,A_1,A_1}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^K I^J\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1,A_1,A_1}t_{I_{14},K_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_2,K_{10})\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I0^J|\hat{g}|1^J^I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_{12},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I0^J|\hat{g}|0^J^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I0^J|\hat{g}|1^KI^J\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_3, K_{10})\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2},K_{10}}\\ &+\frac{1}{12}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_2,K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^J 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_1,J_2} t_{I_{14},K_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}|0^J 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_1,J_2} t_{I_{14},K_8} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{14},K_{8}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{14},K_{8}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{14},K_{8}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{14},K_{8}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1},J_{2}}t_{I_{14},K_{8}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{14},K_{8}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{14},K_{8}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{14},K_{8}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{14},K_{8}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1},J_{2}}t_{I_{14},K_{8}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{3},K_{8})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{14},K_{8}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{14},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{14},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{14},K_{8}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{14},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{14},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{14},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{14},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{14},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{14},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{14},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{14},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1},A_{1},A_{3}}t_{I_{14},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1},J_{3}}t_{I_{14},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_1,K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J |\hat{g}| 0^J 0^K \rangle \langle I_{11}| \hat{1}_{\alpha}^+ |I_0\rangle \langle J_1| \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle \langle K_9| \hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_9} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J |\hat{g}| 1^J 0^K \rangle \langle I_{11}| \hat{1}_{\alpha}^+ |I_0\rangle \langle J_1| \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle \langle K_9| \hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_9} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J |\hat{g}| 0^K 0^J \rangle \langle I_{11}| \hat{1}_{\alpha}^+ |I_0\rangle \langle J_1| \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle \langle K_9| \hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_9} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J |\hat{g}| 0^K 0^J \rangle \langle I_{11}| \hat{1}_{\alpha}^+ |I_0\rangle \langle J_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle \langle K_9| \hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_9} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J |\hat{g}| 0^K 1^J \rangle \langle I_{11}| \hat{1}_{\alpha}^+ |I_0\rangle \langle J_1| \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle \langle K_9| \hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_9} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J |\hat{g}| 0^K 1^J \rangle \langle I_{11}| \hat{1}_{\alpha}^+ |I_0\rangle \langle J_1| \hat{1}_{\beta}^+ \hat{1}_{\alpha}^- |J_0\rangle \langle K_9| \hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{11},K_{9}}}{+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{11},K_{9}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{11},K_{9}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{11},K_{9}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{11},K_{9}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{11},K_{9}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{11},K_{9}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_1,K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 0^J|\hat{g}|0^J 0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{13},K_7} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 1^J|\hat{g}|1^J 0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{13},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 0^J|\hat{g}|0^K 0^J\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{13},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 1^J|\hat{g}|0^K 1^J\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{13},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 0^J|\hat{g}|0^K 0^J\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{13},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 1^J|\hat{g}|0^K 1^J\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_{13},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 0^J|\hat{g}|0^J 0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{13},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 1^J|\hat{g}|0^J 0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{13},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 1^J|\hat{g}|0^J 0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{13},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 1^J|\hat{g}|0^J 0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_{13},K_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 1^J|\hat{g}|0^J 0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{J_1}t_{J_13,K_7} \\ &+ \frac{1}{12}\sum_{L}\sum_{L}\sum_{L}\langle 1^L 1^J|\hat{g}|0^L 1^J\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1,A_1,A_2} \\ &+ \frac{1}{12}\sum_{L}\sum_{L}\sum_{L}\langle 1^L 1^J|\hat{g}|0^L 1^J\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{13},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{13},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{13},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{13},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{13},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{13},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{13},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{13},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{13},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{13},K_{7}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_1,K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 0^J 1^K \rangle \langle I_{11}| \hat{1}^+_{\alpha} | I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} | J_0 \rangle \langle K_{10}| \hat{1}^-_{\alpha} | K_0 \rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_{10}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J | \hat{g} | 1^J 1^K \rangle \langle I_{11}| \hat{1}^+_{\alpha} | I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} | J_0 \rangle \langle K_{10}| \hat{1}^-_{\alpha} | K_0 \rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 1^K 0^J \rangle \langle I_{11}| \hat{1}^+_{\alpha} | I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} | J_0 \rangle \langle K_{10}| \hat{1}^-_{\alpha} | K_0 \rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 1^K 0^J \rangle \langle I_{11}| \hat{1}^+_{\alpha} | I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} | J_0 \rangle \langle K_{10}| \hat{1}^-_{\alpha} | K_0 \rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J | \hat{g} | 1^K 1^J \rangle \langle I_{11}| \hat{1}^+_{\alpha} | I_0 \rangle \langle J_1| \hat{1}^+_{\alpha} \hat{1}^-_{\alpha} | J_0 \rangle \langle K_{10}| \hat{1}^-_{\alpha} | K_0 \rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J | \hat{g} | 1^K 1^J \rangle \langle I_{11}| \hat{1}^+_{\alpha} | I_0 \rangle \langle J_1| \hat{1}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle \langle K_{10}| \hat{1}^-_{\alpha} | K_0 \rangle t_{A_1} t_{B_1,J_1} t_{I_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 0^J 1^K \rangle \langle I_{11}| \hat{1}^+_{\alpha} | I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} | J_0 \rangle \langle K_{10}| \hat{1}^-_{\alpha} | K_0 \rangle t_{A_1,B_1} t_{J_1} t_{I_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 1^J 1^K \rangle \langle I_{11}| \hat{1}^+_{\alpha} | I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} | J_0 \rangle \langle K_{10}| \hat{1}^-_{\alpha} | K_0 \rangle t_{A_1,B_1} t_{J_1} t_{I_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 1^K 0^J \rangle \langle I_{11}| \hat{1}^+_{\alpha} | I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} | J_0 \rangle \langle K_{10}| \hat{1}^-_{\alpha} | K_0 \rangle t_{A_1,B_1} t_{J_1} t_{I_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} | 1^K 0^J \rangle \langle I_{11}| \hat{1}^+_{\alpha} | I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} | J_0 \rangle \langle K_{10}| \hat{1}^-_{\alpha} | K_0 \rangle t_{A_1,B_1} t_{J_1} t_{I_{11},K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J | \hat{g} |$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\right\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{11},K_{10}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\right\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{11},K_{10}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\right\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{11},K_{10}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{11},K_{10}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{11},K_{10}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\right\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{11},K_{10}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\right\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{11},K_{10}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\right\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{11},K_{10}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\right\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{11},K_{10}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\right\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{11},K_{10}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\right\rangle \langle I_{11}|\hat{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_1,K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{13},K_{8}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{13$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0$$

 $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{11},K_{9}}$

 $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 1^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{11},K_{9}}$

 $+ \tfrac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 1^I 1^J | \hat{g} | 0^J 0^K \rangle \langle I_{11} | \hat{1}^+_\alpha | I_0 \rangle \langle J_2 | \hat{1}^+_\alpha \hat{0}^-_\alpha | J_0 \rangle \langle K_9 | \hat{0}^-_\alpha | K_0 \rangle t_{B_1} t_{A_1,J_2} t_{I_{11},K_9}$

 $+ \frac{-1}{12} \sum \sum \sum \langle 1^I 0^J | \hat{g} | 1^J 0^K \rangle \langle I_{11} | \hat{1}^+_\alpha | I_0 \rangle \langle J_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | J_0 \rangle \langle K_9 | \hat{0}^-_\alpha | K_0 \rangle t_{A_1} t_{B_1,J_2} t_{I_{11},K_9}$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_2, K_9)\rangle =$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{11}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{11}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{11}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{11}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{11}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{11}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{11}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{11}, K_{9}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_3, K_9)\rangle =$ $+ \tfrac{-1}{12} \sum \sum \sum \langle 1^I 0^J | \hat{g} | 1^J 0^K \rangle \langle I_{11} | \hat{1}^+_\alpha | I_0 \rangle \langle J_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | J_0 \rangle \langle K_9 | \hat{0}^-_\alpha | K_0 \rangle t_{A_1} t_{B_1,J_3} t_{I_{11},K_9}$ $+ \frac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 1^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{3}} t_{I_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{11},K_{9}}$ $\sum_{I} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{11}, K_{9}}$ $+ \frac{1}{12} \sum \sum \sum \langle 1^I 0^J | \hat{g} | 0^K 1^J \rangle \langle I_{11} | \hat{1}^+_{\alpha} | I_0 \rangle \langle J_3 | \hat{1}^+_{\beta} \hat{0}^-_{\beta} | J_0 \rangle \langle K_9 | \hat{0}^-_{\alpha} | K_0 \rangle t_{A_1} t_{B_1,J_3} t_{I_{11},K_9}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{3}} t_{I_{11}, K_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{\Lambda}\sum_{\Lambda}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{11},K_{9}}$ $+\frac{1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{11},K_{9}}$ $+ \frac{-1}{12} \sum_{i} \sum_{j} \sum_{i} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{3} | \hat{0}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{3}} t_{I_{11},K_{9}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}^{+}_{\alpha}|I_{0}\rangle\langle J_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{9}|\hat{0}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{11},K_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{11},K_{9}}$ $+\frac{1}{12}\sum\sum\sum\sum\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{11},K_{9}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_2, K_7)\rangle =$ $+ \frac{-1}{12} \sum \sum \sum \langle 1^I 0^J | \hat{g} | 1^J 0^K \rangle \langle I_{13} | \hat{1}^+_\beta | I_0 \rangle \langle J_2 | \hat{0}^+_\beta \hat{1}^-_\beta | J_0 \rangle \langle K_7 | \hat{0}^-_\beta | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_{13}, K_7}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{13},K_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{0}^{+}_{\beta} \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{13},K_{7}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{I}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{13},K_{7}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{13},K_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{13}, K_{7}}$ $+\frac{-1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{13},K_{7}}$ $+ \frac{1}{12} \sum_{i} \sum_{j} \sum_{i} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{2} | \hat{0}^{+}_{\beta} \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{13}, K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{\Lambda}\sum_{I}\left\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{13},K_{7}}\right\rangle$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{13},K_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{13},K_{7}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_3, K_7)\rangle =$
$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{3}} t_{I_{13},K_{7}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{C} \langle 1^{I} 1^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{3}} t_{I_{13},K_{7}} \end{split}$$
 $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{13},K_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{13},K_{7}}$ $+\frac{-1}{12}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{13},K_{7}}$ $+ \frac{1}{12} \sum_{I} \sum_{K} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{3} | \hat{0}^{+}_{\beta} \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{3}} t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{I}\left\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{13},K_{7}}\right\rangle$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{13},K_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{13},K_{7}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{13},K_{7}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{3}} t_{I_{13}, K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}X^{I}(1^{I}0^{J}|\hat{g}|0^{K}1^{J})\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{13},K_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{13},K_{7}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{13},K_{7}}$ $+\frac{-1}{12}\sum_{r}^{I}\sum_{s}^{J}\sum_{r}^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{13},K_{7}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{13},K_{7}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_2, K_{10})\rangle =$
$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{2}} t_{I_{11}, K_{10}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{M} \sum_{M} \langle 1^{I} 1^{J} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{2}} t_{I_{11}, K_{10}} \end{split}$$
 $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{11},K_{10}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{11},K_{10}}$ $\sum_{i=1}^{J} \sum_{k=1}^{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{2}} t_{I_{11}, K_{10}}$ $+\frac{1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{11},K_{10}}$ $+\frac{-1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{11}|\hat{1}^{+}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{11},K_{10}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{2}} t_{I_{11}, K_{10}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | J_{0} \rangle \langle K_{10} | \hat{1}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{2}} t_{I_{11}, K_{10}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{11},K_{10}}$ $\sum_{I}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{11},K_{10}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{11},K_{10}}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \sum_{\alpha} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{11}, K_{10}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{11},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{11},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{11},K_{10}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{11},K_{10}}$ $+\frac{1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}^{+}_{\alpha}|I_{0}\rangle\langle J_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{11},K_{10}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{2} | \hat{0}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | J_{0} \rangle \langle K_{10} | \hat{1}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{11}, K_{10}}$ $+\frac{-1}{12}\sum^{I}\sum^{\sigma}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{11},K_{10}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{11},K_{10}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{\Lambda}\sum_{\Lambda}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{11},K_{10}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_3,K_{10})\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{11},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{11},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{11},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{11},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{11},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{11},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{11},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 1^{I}0^{J}|\hat{g}|1^{K}1$$

$$\begin{split} &\langle \langle (A_1, B_1) | \hat{H} | (A_1, B_1, I_{13}, J_2, K_8) \rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^J I^K \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_{13}, K_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^J I^K \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_{13}, K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^K I^J \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_{13}, K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^K I^J \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_{13}, K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^K I^J \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_{13}, K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^K I^J \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{A_1, B_1, J_2} t_{I_{13}, K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^K I^J \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{A_1, B_1} t_{J_2} t_{I_{13}, K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^K I^J \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{A_1, B_1} t_{J_2} t_{I_{13}, K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^K I^J \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{A_1, B_1} t_{J_2} t_{I_{13}, K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^K I^J \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{A_1, B_1} t_{J_2} t_{I_{13}, K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^I O^J | \hat{g} | I^K$$

$$\begin{split} &\langle (A_1,B_1)|H|\langle (A_1,B_1,I_{13},J_3,K_8)\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{5}}t_{I_{13},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{5}}t_{I_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{5}}t_{I_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{5}}t_{I_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{5}}t_{I_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{5}}t_{I_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1},J_{3}}t_{I_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1},J_{3}}t_{I_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1},J_{3}}t_{I_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1},J_{3},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_1,J_9,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}|0^I 0^K \rangle \langle I_1|\hat{0}_{\alpha}^{\dagger} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{\dagger} |K_0\rangle t_{A_1} t_{B_1,I_1} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 1^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{9},K_{12}}}{t_{1}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{9},K_{12}}}{t_{1}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{9},K_{12}}}{t_{1}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{9},K_{12}}}{t_{1}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{9},K_{12}}}{t_{1}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{9},K_{12}}}{t_{1}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{A_{1},I_{1}}t_{J_{9},K_{12}}}{t_{2}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_1,J_7,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}|0^I 0^K \rangle \langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_1,I_1} t_{J_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}|0^I 0^K \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_1,I_1} t_{J_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J |\hat{g}|1^I 0^K \rangle \langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_1,I_1} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (1^{I}0^{J}|\hat{g}|1^{I}0^{K})\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (0^{I}0^{I}|\hat{g}|0^{J}0^{K})\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (1^{I}I^{I}|\hat{g}|0^{J}0^{K})\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (0^{I}0^{J}|\hat{g}|0^{J}0^{K})\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (1^{I}0^{J}|\hat{g}|1^{J}0^{K})\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (1^{I}0^{J}|\hat{g}|1^{J}0^{K})\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (1^{I}0^{J}|\hat{g}|1^{J}0^{K})\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (1^{I}0^{J}|\hat{g}|0^{J}0^{K})\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (1^{I}0^{J}|\hat{g}|0^{J}0^{K})\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (1^{I}0^{J}|\hat{g}|0^{J}0^{K})\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1},I_{2},K_{14}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{N}\left\langle (1^{I}0^{J}|\hat{g}|0^{J}0^{K})\langle I_{1}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{1},J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{10},K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{10},K_{12}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{10},K_{12}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{10},K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle \langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{10},K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle \langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I}t_{J_{0},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}1\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}1\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}1\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_1,J_8,K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|0^I 0^K\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|0^I 0^K\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 1^J|\hat{g}|1^I 0^K\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 1^J|\hat{g}|1^I 0^K\rangle\langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^I|\hat{g}|1^J 0^K\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I 1^I|\hat{g}|1^J 0^K\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|0^I 0^K\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|0^I 0^K\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|0^I 0^K\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|0^I 0^K\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{L}\sum_{K}\langle 0^I 1^J|\hat{g}|0^I 0^K\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_8,K_{14}}\\ &+ \frac{-1}{12}\sum_{L}\sum_{L}\sum_{K}\langle 0^I 1^J|\hat{g}|0^I 0^K\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{14}}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{14}}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{14}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{14}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{14}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{14}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{8},K_{14}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{8},K_{14}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{1}}t_{J_{8},K_{14}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{J_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|0^{I}0^{K}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_9,K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I |\hat{g}| 0^J 0^K \rangle \langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I |\hat{g}| 0^K 0^J \rangle \langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+} |K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{L}$$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{2}} t_{J_{9}, K_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{2}} t_{J_{9}, K_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{2}} t_{J_{9}, K_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{2}} t_{J_{9}, K_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{9}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{9}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{9}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{9}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_9,K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 0^K \rangle \langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 0^K \rangle \langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I|\hat{g}|0^J 0^K \rangle \langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I|\hat{g}|0^K 0^J \rangle \langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 0^K \rangle \langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 0^K \rangle \langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 0^K \rangle \langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 0^K \rangle \langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 0^K \rangle \langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 0^K \rangle \langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 0^K \rangle \langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^{+}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 0^K \rangle \langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_7,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle \langle J_7| \hat{0}_{\beta}^{-} |J_0 \rangle \langle K_{14}| \hat{0}_{\beta}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_7| \hat{0}_{\beta}^{-} |J_0 \rangle \langle K_{14}| \hat{0}_{\beta}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0 \rangle \langle J_7| \hat{0}_{\beta}^{-} |J_0 \rangle \langle K_{14}| \hat{0}_{\beta}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0 \rangle \langle J_7| \hat{0}_{\beta}^{-} |J_0 \rangle \langle K_{14}| \hat{0}_{\beta}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 0^J 0^K \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle \langle J_7| \hat{0}_{\beta}^{-} |J_0 \rangle \langle K_{14}| \hat{0}_{\beta}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 0^K 0^J \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle \langle J_7| \hat{0}_{\beta}^{-} |J_0 \rangle \langle K_{14}| \hat{0}_{\beta}^{+} |K_0 \rangle t_{A_1,B_1,I_2} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_7| \hat{0}_{\beta}^{-} |J_0 \rangle \langle K_{14}| \hat{0}_{\beta}^{+} |K_0 \rangle t_{A_1,B_1} t_{I_2} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_7| \hat{0}_{\beta}^{-} |J_0 \rangle \langle K_{14}| \hat{0}_{\beta}^{+} |K_0 \rangle t_{A_1,B_1} t_{I_2} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_7| \hat{0}_{\beta}^{-} |J_0 \rangle \langle K_{14}| \hat{0}_{\beta}^{+} |K_0 \rangle t_{A_1,B_1} t_{I_2} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle \langle J_7| \hat{0}_{\beta}^{-} |J_0 \rangle \langle K_{14}| \hat{0}_{\beta}^{+} |K_0 \rangle t_{A_1,B_1} t_{I_2} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 0^K \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\beta$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_3, J_7, K_{14})\rangle =$ $+ \tfrac{-1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 1^I 0^K \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_7 | \hat{0}_\beta^- | J_0 \rangle \langle K_{14} | \hat{0}_\beta^+ | K_0 \rangle t_{A_1} t_{B_1, I_3} t_{J_7, K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{7},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{3}} t_{J_{7},K_{14}}$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 1^I | \hat{g} | 0^J 0^K \rangle \langle I_3 | \hat{0}^+_\beta \hat{1}^-_\beta | I_0 \rangle \langle J_7 | \hat{0}^-_\beta | J_0 \rangle \langle K_{14} | \hat{0}^+_\beta | K_0 \rangle t_{A_1} t_{B_1, I_3} t_{J_7, K_{14}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{3} | \hat{1}^{+}_{\beta} \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{3}} t_{J_{7},K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\sum\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{7},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{3}} t_{J_{7}, K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{3}} t_{J_{7}, K_{14}}$ $+ \frac{1}{12} \sum^{\bullet} \sum^{\bullet} \sum^{\bullet} \langle 0^I 1^I | \hat{g} | 0^J 0^K \rangle \langle I_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | I_0 \rangle \langle J_7 | \hat{0}^-_{\beta} | J_0 \rangle \langle K_{14} | \hat{0}^+_{\beta} | K_0 \rangle t_{A_1,B_1} t_{I_3} t_{J_7,K_{14}}$ $+\frac{1}{12}\sum\sum\sum\sum\sum\langle 0^{I}I^{I}|\hat{g}|0^{K}0^{J}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{7},K_{14}}$ $+ \frac{-1}{12} \sum_{} \sum_{} \sum_{} \sum_{} \sum_{} \langle 0^I 0^J | \hat{g} | 1^I 0^K \rangle \langle I_3 | \hat{0}^+_\beta \hat{1}^-_\beta | I_0 \rangle \langle J_7 | \hat{0}^-_\beta | J_0 \rangle \langle K_{14} | \hat{0}^+_\beta | K_0 \rangle t_{B_1} t_{A_1,I_3} t_{J_7,K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{7},K_{14}}$ $+ \tfrac{-1}{12} \sum_{} \sum_{} \sum_{} \sum_{} \langle 0^I 0^J | \hat{g} | 1^I 0^K \rangle \langle I_3 | \hat{1}^+_\beta \hat{0}^-_\beta | I_0 \rangle \langle J_7 | \hat{0}^-_\beta | J_0 \rangle \langle K_{14} | \hat{0}^+_\beta | K_0 \rangle t_{B_1} t_{A_1,I_3} t_{J_7,K_{14}} dt_{A_1,I_3} t_{J_7,K_{14}} dt_{A_1,I_3} t_{J_7,K_{14}} dt_{A_1,I_3} dt_{A_1,I_3$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{7},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{7},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{7},K_{14}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}} t_{J_{7},K_{14}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}} t_{J_{7},K_{14}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}} t_{J_{7},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}} t_{J_{7},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}} t_{J_{7},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_2, J_{10}, K_{12})\rangle =$ $+ \tfrac{-1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 1^I 0^K \rangle \langle I_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{10} | \hat{1}_\alpha^- | J_0 \rangle \langle K_{12} | \hat{0}_\alpha^+ | K_0 \rangle t_{A_1} t_{B_1, I_2} t_{J_{10}, K_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{10},K_{12}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum_{i}\sum_{j}\sum_{i}\sum_{j}\sum_{i}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{10},K_{12}}$ $+ \frac{-1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 1^I 0^K \rangle \langle I_2 | \hat{1}^+_\beta \hat{0}^-_\beta | I_0 \rangle \langle J_{10} | \hat{1}^-_\alpha | J_0 \rangle \langle K_{12} | \hat{0}^+_\alpha | K_0 \rangle t_{A_1} t_{B_1, I_2} t_{J_{10}, K_{12}}$ $+ \frac{-1}{12} \sum_{i} \sum_{j} \sum_{i} \sum_{j} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{10},K_{12}}$ $+ \frac{-1}{12} \sum_{i} \sum_{j} \sum_{i} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{10},K_{12}}$ $+ \frac{-1}{12} \sum_{i} \sum_{j} \sum_{i} \sum_{j} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{10}, K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\left\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{10},K_{12}}\right\rangle$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{10}, K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{10}, K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{10}, K_{12}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{10}, K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{10}, K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{10}, K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{10}, K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{10}, K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_3, J_{10}, K_{12})\rangle =$ $+ \frac{-1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 1^I 0^K \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle t_{A_1} t_{B_1, I_3} t_{J_{10}, K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{10}|\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{12}|\hat{0}^{+}_{\alpha}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{10},K_{12}}$ $\sum_{i=1}^{J} \sum_{k=1}^{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} t_{J_{10},K_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} t_{J_{10},K_{12}}$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 1^I | \hat{g} | 1^J 0^K \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle t_{A_1, B_1} t_{I_3} t_{J_{10}, K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{I}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{10}|\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{12}|\hat{0}^{+}_{\alpha}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{10},K_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{3}} t_{J_{10}, K_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{3}} t_{J_{10}, K_{12}}$ $+\frac{1}{12}\sum_{}^{}\sum_{}^{}\sum_{}^{}\sum_{}^{}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{10}|\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{12}|\hat{0}^{+}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{10}|\hat{1}^{-}_{\alpha}|J_{0}\rangle\langle K_{12}|\hat{0}^{+}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{10},K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{12}}$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{12}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_2, J_8, K_{14})\rangle =$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{8}, K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{8},K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{8},K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{8},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{2}} t_{J_{8}, K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{8},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{8},K_{14}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{8},K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{I}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{8},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{8}, K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{8}, K_{14}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{8},K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{J}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{14}}$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{8}, K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{8}, K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{8}, K_{14}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_3, J_8, K_{14})\rangle =$ $+ \tfrac{-1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 1^I 0^K \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_8 | \hat{1}_\beta^- | J_0 \rangle \langle K_{14} | \hat{0}_\beta^+ | K_0 \rangle t_{A_1} t_{B_1, I_3} t_{J_8, K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{8},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{3}} t_{J_{8},K_{14}} dt_{A_{1}} dt_{A_{1}} t_{A_{1}} dt_{A_{1}} d$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{I}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{8},K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{8},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{3}} t_{J_{8}, K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{3}} t_{J_{8}, K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{8},K_{14}}$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 1^I | \hat{g} | 0^K 1^J \rangle \langle I_3 | \hat{1}^+_\beta \hat{0}^-_\beta | I_0 \rangle \langle J_8 | \hat{1}^-_\beta | J_0 \rangle \langle K_{14} | \hat{0}^+_\beta | K_0 \rangle t_{A_1,B_1} t_{I_3} t_{J_8,K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{8},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{3}} t_{J_{8}, K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{8},K_{14}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{3}} t_{J_{8}, K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{8},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{3}} t_{J_{8}, K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{8},K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{8},K_{14}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{8},K_{14}}$

$$+ \tfrac{1}{12} \sum_I \sum_J \sum_K \langle 0^I 1^I | \hat{g} | 0^K 1^J \rangle \langle I_3 | \hat{1}^+_\beta \hat{0}^-_\beta | I_0 \rangle \langle J_8 | \hat{1}^-_\beta | J_0 \rangle \langle K_{14} | \hat{0}^+_\beta | K_0 \rangle t_{A_1} t_{B_1} t_{I_3} t_{J_8, K_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_1,J_9,K_{11})\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^I I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_9,K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^I I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^I|\hat{g}|0^J I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle \langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_1,J_7,K_{13})\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^I I^K\rangle\langle I_1|\hat{0}_{\beta}^{\dagger}\hat{g}_{\beta}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^I I^K\rangle\langle I_1|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I O^J|\hat{g}|1^I I^K\rangle\langle I_1|\hat{1}_{\alpha}^{\dagger}\hat{1}_{\alpha}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I O^J|\hat{g}|1^I I^K\rangle\langle I_1|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle\langle I_1|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle\langle I_1|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1}t_{B_1,I_1}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle\langle I_1|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I O^J|\hat{g}|0^J I^K\rangle\langle I_1|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I O^J|\hat{g}|0^J I^K\rangle\langle I_1|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\alpha}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I O^J|\hat{g}|0^J I^K\rangle\langle I_1|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle\langle I_1|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1,B_1}t_{I_1}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|0^J I^K\rangle\langle I_1|\hat{0}_{\alpha}^{\dagger}\hat{0}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1,I_1}t_$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_1, J_{10}, K_{11})\rangle =$$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{S} \langle O^{I} 1^{J} | \hat{g} | O^{I} 1^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{O}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle k_{A_{1}} t_{B_{1},I_{1}} t_{J_{10},K_{11}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle O^{I} 0^{J} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{10},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle O^{I} 0^{J} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{10},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle O^{I} 1^{J} | \hat{g} | O^{I} 1^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{10},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle O^{I} 1^{J} | \hat{g} | O^{I} 1^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{10},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle O^{I} 1^{J} | \hat{g} | O^{I} 1^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},I_{1}} t_{J_{10},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle O^{I} 1^{J} | \hat{g} | O^{I} 1^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{10},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle O^{I} 1^{J} | \hat{g} | O^{I} 1^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{10},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle O^{I} 1^{J} | \hat{g} | O^{I} 1^{K} \rangle \langle I_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{1}} t_{J_{10},K_{11}} \\ & + \frac{1}{12}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_1,J_8,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}|0^I 1^K \rangle \langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_1,I_1} t_{J_8,K_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}|0^I 1^K \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_1,I_1} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left(1^{I}I^{J}|\hat{g}|I^{I}K\rangle\langle I_{1}|\hat{1}_{\rho}^{+}\hat{f}_{\rho}|I_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\rho}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{8},K_{13}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left(0^{I}O^{I}|\hat{g}|I^{I}K\rangle\langle I_{1}|\hat{1}_{\sigma}^{+}\hat{a}_{\alpha}|I_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\rho}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{8},K_{13}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left(0^{I}O^{I}|\hat{g}|I^{J}K\rangle\langle I_{1}|\hat{0}_{\rho}^{+}\hat{0}_{\rho}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\rho}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{8},K_{13}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left(0^{I}I^{J}|\hat{g}|I^{J}K\rangle\langle I_{1}|\hat{0}_{\rho}^{+}\hat{0}_{\rho}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\rho}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{8},K_{13}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left(0^{I}I^{J}|\hat{g}|0^{I}K\rangle\langle I_{1}|\hat{0}_{\rho}^{+}\hat{0}_{\rho}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\rho}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{1}}t_{J_{8},K_{13}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\left(0^{I}I^{J}|\hat{g}|0^{I}K\rangle\langle I_{1}|\hat{0}_{\rho}^{+}\hat{0}_{\rho}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\rho}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{13}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\left(1^{I}I^{J}|\hat{g}|0^{I}K^{N}\rangle\langle I_{1}|\hat{0}_{\rho}^{+}\hat{0}_{\rho}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\rho}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{13}}} \\ &+\frac{1}{12}\sum_{J}\sum_{J}\sum_{S}\sum_{K}\left(1^{I}I^{J}|\hat{g}|1^{I}I^{K}\rangle\langle I_{1}|\hat{0}_{\rho}^{+}\hat{0}_{\rho}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\rho}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{13}} \\ &+\frac{1}{12}\sum_{J}\sum_{J}\sum_{S}\sum_{K}\left(0^{I}O^{I}|\hat{g}|1^{J}I^{K}\rangle\langle I_{1}|\hat{0}_{\rho}^{+}\hat{0}_{\rho}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\rho}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{13}} \\ &+\frac{1}{12}\sum_{J}\sum_{J}\sum_{K}\left(0^{I}I^{J}|\hat{g}|0^{I}I^{K}\rangle\langle I_{1}|\hat{0}_{\rho}^{+}\hat{0}_{\rho}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\rho}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{1}}t_{J_{8},K_{13}} \\ &+\frac{1}{12}\sum_{J}\sum_{J}\sum_{K}\left(0^{I}I^{J}|\hat{g}|0^{I}I^{K}\rangle\langle I_{1}|\hat{0}_{\rho}^{+}\hat{0}_{\rho}^{-}|J_{0}\rangle\langle J_{8}|\hat{1}_{\rho}^{-}|J_{0}\rangle\langle K_{13}|\hat{1$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{2},J_{9},K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle \langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{9},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle \langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}1^{I}|\hat{g}|0^{J}1^{K}\rangle \langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}1^{I}|\hat{g}|1^{K}0^{J}\rangle \langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{9},K_{11}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\beta}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{I}1^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_9,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_9| \hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_9| \hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_9,K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 0^J 1^K \rangle \langle I_3| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_9| \hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_9,K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 1^K 0^J \rangle \langle I_3| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0\rangle \langle J_9| \hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0\rangle \langle J_9| \hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0\rangle \langle J_9| \hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle \langle J_9| \hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle \langle J_9| \hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle \langle J_9| \hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle \langle J_9| \hat{0}_{\alpha}^{-} |J_0\rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0\rangle t_{A_1} t_{B_1,I_3} t_{J_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{L} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |I_0\rangle \langle J_9| \hat{$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{9},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_7,K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_7,K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I|\hat{g}|0^J 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_7,K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^I|\hat{g}|1^K 0^J\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_2}t_{J_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1,B_1}t_{I_2}t_{J_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{L}\sum_{L}\sum_{L}\langle 0^I 0^J|\hat{g}|1^I 1^K\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle I_1|\hat{0}_{\beta}^{-}|I_0\rangle\langle I_1|\hat{0}_{\beta}^{-}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_7,K_{13})\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^I|\hat{g}|0^J1^K\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^I|\hat{g}|1^K0^J\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_1,I_3}t_{J_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^I1^K\rangle\langle I_3|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_0\rangle t_{A_1,B_1}t_{I_3}t_{J_7,K_$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{7},K_{13}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{7},K_{13}}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{7},K_{13}}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{7},K_{13}}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_2,J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^{-} |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_2| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^{-} |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 1^J 1^K \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^{-} |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 1^K 1^J \rangle \langle I_2| \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^{-} |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^{-} |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_2| \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^{-} |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0 \rangle t_{A_1} t_{B_1,I_2} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^{-} |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0 \rangle t_{A_1,B_1} t_{I_2} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^{-} |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0 \rangle t_{A_1,B_1} t_{I_2} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^{-} |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0 \rangle t_{A_1,B_1} t_{I_2} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_2| \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^{-} |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^{+} |K_0 \rangle t_{A_1,B_1} t_{I_2} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum$$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{10}, K_{11}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{10}, K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{10}, K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{I} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{10}, K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{10}, K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{10}, K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{10}, K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{2}} t_{J_{10}, K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_3,J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1} t_{B_1,I_3} t_{J_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1} t_{B_1,I_3} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 1^J 1^K \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1} t_{B_1,I_3} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^I |\hat{g}| 1^K 1^J \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1} t_{B_1,I_3} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1} t_{B_1,I_3} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1} t_{B_1,I_3} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1,B_1} t_{I_3} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^I 1^K \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1,B_1} t_{I_3} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^J 1^K \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1,B_1} t_{I_3} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^J 1^K \rangle \langle I_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1,B_1} t_{I_3} t_{J_{10},K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^J 1^K \rangle \langle I_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{1$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_2, J_8, K_{13})\rangle =$ $+ \tfrac{-1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 1^I 1^K \rangle \langle I_2 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_8 | \hat{1}_\beta^- | J_0 \rangle \langle K_{13} | \hat{1}_\beta^+ | K_0 \rangle t_{A_1} t_{B_1, I_2} t_{J_8, K_{13}}$ $+ \frac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{8}, K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{8},K_{13}}$ $\sum_{I} \sum_{i=1}^{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, I_{2}} t_{J_{8}, K_{13}}$ $\sum \sum \langle 0^I 1^I | \hat{g} | 1^J 1^K \rangle \langle I_2 | \hat{0}^+_\beta \hat{1}^-_\beta | I_0 \rangle \langle J_8 | \hat{1}^-_\beta | J_0 \rangle \langle K_{13} | \hat{1}^+_\beta | K_0 \rangle t_{A_1} t_{B_1, I_2} t_{J_8, K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{I}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{2}}t_{J_{8},K_{13}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{8},K_{13}}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{8},K_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{8},K_{13}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{2}} t_{J_{8},K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{8},K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{I}\sum^{I}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{2}}t_{J_{8},K_{13}}$ $+ \frac{-1}{12} \sum_{} \sum_{} \sum_{} \sum_{} \sum_{} \langle 0^I 1^J | \hat{g} | 1^I 1^K \rangle \langle I_2 | \hat{0}^+_\beta \hat{1}^-_\beta | I_0 \rangle \langle J_8 | \hat{1}^-_\beta | J_0 \rangle \langle K_{13} | \hat{1}^+_\beta | K_0 \rangle t_{B_1} t_{A_1,I_2} t_{J_8,K_{13}}$ $+ \frac{-1}{12} \sum_{}^{} \sum_{}^{} \sum_{}^{} \sum_{}^{} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, I_{2}} t_{J_{8}, K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{8},K_{13}}$ $+ \tfrac{-1}{12} \sum_{} \sum_{} \sum_{} \sum_{} \langle 0^I 1^J | \hat{g} | 1^I 1^K \rangle \langle I_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_8 | \hat{1}_{\beta}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{B_1} t_{A_1, I_2} t_{J_8, K_{13}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{8},K_{13}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{2}}t_{J_{8},K_{13}}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{13}}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{13}}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{13}}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{2}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}1^{K}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_3, J_8, K_{13})\rangle =$ $+ \frac{-1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 1^I 1^K \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_8 | \hat{1}_{\beta}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1} t_{B_1, I_3} t_{J_8, K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{8},K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{8},K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{8},K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{8},K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},I_{3}}t_{J_{8},K_{13}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^I 1^J | \hat{g} | 1^I 1^K \rangle \langle I_3 | \hat{0}^+_\beta \hat{1}^-_\beta | I_0 \rangle \langle J_8 | \hat{1}^-_\beta | J_0 \rangle \langle K_{13} | \hat{1}^+_\beta | K_0 \rangle t_{A_1,B_1} t_{I_3} t_{J_8,K_{13}} t_{I_8,K_{13}} t_{$ $+ \frac{-1}{12} \sum_{i} \sum_{j} \sum_{i} \sum_{j} \sum_{i} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{I_{3}} t_{J_{8}, K_{13}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} t_{J_{8},K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{8},K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{I_{3}}t_{J_{8},K_{13}}$ $+ \tfrac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 1^{I} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{3} | \hat{1}^{+}_{\beta} \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{13} | \hat{1}^{+}_{\beta} | K_{0} \rangle t_{A_{1},B_{1}} t_{I_{3}} t_{J_{8},K_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\left\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{8},K_{13}}\right.$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},I_{3}} t_{J_{8},K_{13}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J | \hat{g} | 1^I 1^K \rangle \langle I_3 | \hat{1}^+_\beta \hat{0}^-_\beta | I_0 \rangle \langle J_8 | \hat{1}^-_\beta | J_0 \rangle \langle K_{13} | \hat{1}^+_\beta | K_0 \rangle t_{B_1} t_{A_1,I_3} t_{J_8,K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{8},K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{8},K_{13}}$ $+\frac{1}{12}\sum_{i}^{I}\sum_{j}^{J}\sum_{k}^{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},I_{3}}t_{J_{8},K_{13}}$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{3}}t_{J_{8},K_{13}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_9, K_1)\rangle =$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0$$

 $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{12},J_{9}}$

 $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{12},J_{9}}$

 $+\frac{1}{12}\sum^{T}\sum^{T}\sum^{T}\sum^{T}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{12},J_{9}}$

 $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{12},J_{9}}$

 $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{12},J_{9}}$

 $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{12},J_{9}}$

 $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{L}\sum_{I}\left\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{12},J_{9}}\right.$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{12},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{12},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{12},J_{9}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_7, K_1)\rangle =$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{7}}$ $+\frac{-1}{12}\sum_{I=1}^{J}\sum_{I=1}^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{I} \sum_{J} \sum_{I} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 1^{K} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{1}} t_{I_{14}, J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{1}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{7}}$ $+\frac{-1}{12}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{7}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{1} | \hat{0}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{1}} t_{I_{14},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{I}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{1}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{K}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{14},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{14},J_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{14},J_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 1^{K} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{1}} t_{I_{14}, J_{7}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 0^{K} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{1}} t_{I_{14}, J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{L}\sum^{I}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{1}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{14},J_{7}}$ $+\frac{1}{12}\sum^{7}\sum^{7}\sum^{7}\sum^{7}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{14},J_{7}}$ $+\frac{1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{14},J_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{14},J_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{J}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{14},J_{7}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{14},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{14},J_{7}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_9, K_2)\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1, K_2} t_{I_{12}, J_9}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{9}}$ $+ \tfrac{1}{12} \sum \sum \sum \langle 0^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{12} | \hat{0}^+_\alpha | I_0 \rangle \langle J_9 | \hat{0}^-_\alpha | J_0 \rangle \langle K_2 | \hat{1}^+_\beta \hat{0}^-_\beta | K_0 \rangle t_{A_1} t_{B_1, K_2} t_{I_{12}, J_9}$ $+ \frac{-1}{12} \sum_{i} \sum_{\alpha} \sum_{\alpha} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{12}, J_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{\alpha}\sum_{\alpha}\sum_{\alpha}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{12},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{12},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{12},J_{9}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{12},J_{9}}$ $\sum_{i=1}^{K} \sum_{j=1}^{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{12}, J_{9}}$ $\sum_{I} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{12}, J_{9}}$ $\sum \sum \langle 0^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{2}} t_{I_{12}, J_{9}}$ $+ \tfrac{1}{12} \sum \sum \sum \langle 0^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | K_0 \rangle t_{B_1} t_{A_1, K_2} t_{I_{12}, J_9}$ $+\frac{1}{12}\sum_{i}\sum_{j}\sum_{k}\sum_{i}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{12},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{12},J_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{12},J_{9}}$ $+ \frac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{2}} t_{I_{12}, J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{12},J_{9}}$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | K_0 \rangle t_{A_1} t_{B_1} t_{K_2} t_{I_{12}, J_9}$ $+\frac{1}{12}\sum_{i}\sum_{j}\sum_{k}\sum_{i}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{12},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{12},J_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{12},J_{9}}$ $+ \frac{-1}{12} \sum_{i} \sum_{j} \sum_{\alpha} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{K_{2}} t_{I_{12}, J_{9}}$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_0,K_3)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|1^K O^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^J|\hat{g}|1^K O^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{J}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{J}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{J}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{J}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|\hat{0}_{\alpha}^-|J_0\rangle\langle K_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_1,K_3}t_{I_{12},J_0} \\ &+\frac{1}{12}\sum_{J}\sum_{J}\sum_{K}\langle 0^I O^K|\hat{g}|0^J I^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_0|$$

$$\begin{split} &\langle (A_1,B_1)|H|(A_1,B_1,I_{14},J_7,K_2)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}I^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}I^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{J}I^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}I^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}I^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}I^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}I^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}I^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}I^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{A_{1},K_{2}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}I^{$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_7, K_3)\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^K |\hat{g}|0^J 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1} t_{B_1, K_3} t_{I_{14}, J_7}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_1)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^K |\hat{g}| 1^J 0^K \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,K_1} t_{I_{12},J_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^K |\hat{g}| 1^J 0^K \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0\rangle \langle K_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_1,K_1} t_{I_{12},J_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^K |\hat{g}| 1^J 1^K \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0\rangle \langle K_1 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_1,K_1} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{1}} t_{I_{12}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{K} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{1}} t_{I_{12}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}, K_{1}} t_{I_{12}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{1}} t_{I_{12}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{1}} t_{I_{12}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{1}} t_{I_{12}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{1}} t_{I_{12}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 0^{K} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{1}} t_{I_{12}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}, t_{A_{1}, K_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{8},K_{1})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{14},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{10},K_{2})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{J}\sum_{L}\sum_{J}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{L}\sum_{L}\sum_{L}\sum_{L}\langle 0^{$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_3)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle\langle K_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle\langle K_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle\langle K_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|1^K0^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle\langle K_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|0^K1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle\langle K_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle I_10|\hat{0}_{\alpha}^{-}|I_0\rangle\langle I$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{12},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{12},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{A_{1},K_{3}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8,K_2)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|1^K0^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|0^K1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|1^K0^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|0^K1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|0^K1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{L}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|0^K1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_{14},J_8} \\ &+ \frac{1}{12}\sum_{L}\sum_{L}\sum_{L}\sum_{L}\sum_{L}\langle 0^I1^J|\hat{g}|0^K1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_8, K_3)\rangle =$ + $\frac{1}{12} \sum \sum \sum \langle 0^I 0^K |\hat{g}| 1^J 1^K \rangle \langle I_{14} |\hat{0}\rangle$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{14},J_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{14},J_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_9, K_1)\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{1}} t_{I_{11}, J_{9}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{9} | \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{1} | \hat{0}^{+}_{\beta} \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{1}} t_{I_{11}, J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{11},J_{9}}$ $\sum \sum \langle 1^{I} 1^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{1}} t_{I_{11}, J_{9}}$ $+ \frac{-1}{12} \sum \sum \sum \langle 1^I 0^J | \hat{g} | 0^K 0^K \rangle \langle I_{11} | \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1, K_1} t_{I_{11}, J_9}$ $+\frac{-1}{12}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{11}|\hat{1}^{+}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{1}|\hat{1}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{7}\sum^{7}\sum^{7}\sum^{7}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{11},J_{9}}$ $+\frac{-1}{12}\sum_{i}\sum_{j}\sum_{i}\sum_{j}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{11},J_{9}}$ $+ \frac{-1}{12} \sum_{i} \sum_{m} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{1}} t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}^{+}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{11},J_{9}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{11},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{11},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_7, K_1)\rangle =$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat$$

 $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 0^{K} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},K_{1}} t_{I_{13},J_{7}}$

 $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{13},J_{7}}$

 $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{13},J_{7}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{13},J_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_9, K_2)\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 1^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{11} | \hat{1}^+_\alpha | I_0 \rangle \langle J_9 | \hat{0}^-_\alpha | J_0 \rangle \langle K_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | K_0 \rangle t_{A_1} t_{B_1, K_2} t_{I_{11}, J_9}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{11}, J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{11},J_{9}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{11},J_{9}}$ $+ \frac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{11}, J_{9}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{11}, J_{9}}$ $\sum_{I} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{11}, J_{9}}$ $+\frac{1}{12}\sum_{}^{}\sum_{}^{}\sum_{}^{}\sum_{}^{}^{}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{L}\sum_{\Lambda}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{11},J_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{11},J_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{11},J_{9}}$ $+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{2}} t_{I_{11}, J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}^{+}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum_{i}\sum_{j}\sum_{k}\sum_{i}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{11},J_{9}}$ $+\frac{-1}{12}\sum_{i}\sum_{j}\sum_{k}\sum_{i}\sum_{j}\sum_{k}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{11},J_{9}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum_{1}\sum_{1}\sum_{1}\sum_{1}\sum_{1}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{11},J_{9}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{11},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{11},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{11},J_{9}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_9, K_3)\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 1^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{11} | \hat{1}^+_\alpha | I_0 \rangle \langle J_9 | \hat{0}^-_\alpha | J_0 \rangle \langle K_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | K_0 \rangle t_{A_1} t_{B_1, K_3} t_{I_{11}, J_9}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{L}\sum_{A}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{11},J_{9}}$ $\sum_{i=1}^{J} \sum_{k=1}^{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{3}} t_{I_{11}, J_{9}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{11}|\hat{1}^{+}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{11},J_{9}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{11},J_{9}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{9} | \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{3} | \hat{0}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{3}} t_{I_{11}, J_{9}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{11},J_{9}}$ $\sum \sum \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{3}} t_{I_{11}, J_{9}}$ $\sum \sum \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{3}} t_{I_{11}, J_{9}}$ $+ \frac{-1}{12} \sum \sum \sum \sum \langle 1^I 0^J | \hat{g} | 1^K 0^K \rangle \langle I_{11} | \hat{1}^+_\alpha | I_0 \rangle \langle J_9 | \hat{0}^-_\alpha | J_0 \rangle \langle K_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | K_0 \rangle t_{A_1,B_1} t_{K_3} t_{I_{11},J_9}$ $+ \frac{-1}{12} \sum \sum \sum \sum \langle 1^I 0^J | \hat{g} | 0^K 1^K \rangle \langle I_{11} | \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | K_0 \rangle t_{A_1, B_1} t_{K_3} t_{I_{11}, J_9}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{11},J_{9}}$ $+\frac{-1}{12}\sum_{1}\sum_{1}\sum_{1}\sum_{1}\sum_{1}\sum_{1}(1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{11},J_{9}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},K_{3}} t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{11},J_{9}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{11},J_{9}}$ $+ \frac{1}{12} \sum_{i} \sum_{\alpha} \sum_{\alpha} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{K_{3}} t_{I_{11}, J_{9}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{11},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{11},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{11},J_{9}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_7, K_2)\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 1^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{13} | \hat{1}^+_\beta | I_0 \rangle \langle J_7 | \hat{0}^-_\beta | J_0 \rangle \langle K_2 | \hat{0}^+_\beta \hat{1}^-_\beta | K_0 \rangle t_{A_1} t_{B_1, K_2} t_{I_{13}, J_7}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{13},J_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{13},J_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{13}, J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{13},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{13},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{13},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{13},J_{7}}$ $+\frac{-1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{13},J_{7}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{2}} t_{I_{13},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{13},J_{7}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{13}, J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{13},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{13},J_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{13},J_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{13},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{13},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{13},J_{7}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{13},J_{7}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}(1^{I}0^{K}|\hat{g}|0^{J}1^{K})\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{13},J_{7}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\sum_{i}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{13},J_{7}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{13},J_{7}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{\Lambda}\sum_{I}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{13},J_{7}}$

$$+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{K_{2}} t_{I_{13}, J_{7}} dt_{A_{1}} dt$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_7,K_3)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^K|\hat{g}|0^{J}1^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^K|\hat{g}|0^{J}1^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^J|\hat{g}|1^K0^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^K|\hat{g}|0^J1^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{\dagger}\hat{1}_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^K|\hat{g}|0^J1^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{\dagger}\hat{1}_{\alpha}^{\dagger}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^K|\hat{g}|0^J1^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{\dagger}\hat{1}_{\alpha}^{\dagger}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^K|\hat{g}|0^J1^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_{13},J_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^K|\hat{g}|0^J1^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{A_1,B_1}t_{A_1,K_3}t_{I_{13},J_7} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^K|\hat{g}|0^J1^K\rangle\langle I_{13}|\hat{1}_{\beta}^{\dagger}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{\dagger}|J_0\rangle\langle K_3|\hat{0}_{\beta}^{\dagger}\hat{1}_{\beta}^{\dagger}|K_0\rangle t_{B_1}t_{A_1,K_3}t_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_1)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_8, K_1)\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S} (1^{I}0^{K}|\hat{g}|1^{J}0^{K})\langle I_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{1_{3},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S} (1^{I}1^{K}|\hat{g}|1^{J}1^{K})\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S} (1^{I}1^{J}|\hat{g}|0^{K}0^{K})\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S} (1^{I}1^{K}|\hat{g}|1^{J}0^{K})\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S} (1^{I}0^{K}|\hat{g}|1^{J}0^{K})\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K} (1^{I}0^{K}|\hat{g}|1^{J}0^{K})\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K} (1^{I}0^{K}|\hat{g}|1^{J}0^{K})\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K} (1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K} (1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K} (1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K} (1^{I}1^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_2)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}| 1^J 1^K \rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle \langle K_2|\hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |K_0\rangle t_{A_1} t_{B_1,K_2} t_{I_{11},J_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}| 1^J 1^K \rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle \langle K_2|\hat{0}^+_{\beta} \hat{1}^-_{\beta} |K_0\rangle t_{A_1} t_{B_1,K_2} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{J} | \hat{g} | 1^{K}0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}, t_{A_{1}, K_{2}} t_{I_{11},$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_3)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{11},J_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{11},J_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{11},J_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{J} | \hat{g} | 1^{K}0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{3}} t_{I_{11}, J_{10}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{J} | \hat{g} | 0^{K}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{3}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{3}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{3}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{3}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{3}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{3}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{3}} t_{I_{11}, J_{10}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{3}} t_{I_{11}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_8,K_2)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}|1^J 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{13},J_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}|1^J 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{13},J_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J |\hat{g}|1^K 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{13},J_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J |\hat{g}|0^K 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{13},J_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}|1^J 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{13},J_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}|1^J 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{13},J_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}|1^J 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{13},J_8} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{A_{1},K_{2}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{A_{1},K_{2}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_8,K_3)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_8} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^J|\hat{g}|1^K0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_8} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^J|\hat{g}|0^K1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_{13},J_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_{13},J_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{A_2,J_1} \\ &+\frac{1}{12}\sum_{L}\sum_{L}\sum_{L}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle I_1^R|\hat{1}^-_{\beta}|I_0\rangle\langle I_1^R|\hat{1}^$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{K}\right\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{13},J_{8}} \right. \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{K}\right\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{g}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{13},J_{8}} \right. \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\right\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{13},J_{8}} \right. \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\right\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{13},J_{8}} \right. \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\right\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{13},J_{8}} \right. \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\right\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{13},J_{8}} \right. \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{K}\right\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{13},J_{8}} \right. \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\right\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{13},J_{8}} \right. \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\right\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{13},J_{8}} \right. \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\right\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{13},J_{8}} \right. \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\left\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\right\rangle\langle I_{13}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_1,K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^J0^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_9,K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|1^J0^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_9,K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_9,K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|0^K1^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_9,K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_9,K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|0^K1^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_9,K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^J0^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_9,K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|1^J0^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_9,K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_9,K_{12}} \\ &+\frac{-1}{12}\sum_{J}\sum_{L}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle I_1|\hat{0}_\alpha^+|I_0\rangle\langle I_1|\hat{0}_\alpha^+|I_0\rangle\langle K_{12}|\hat{0}_\alpha^+|I_0\rangle\langle K_{12}|\hat{0}_\alpha^+|I_0\rangle\langle K_{12}|\hat{0}_\alpha^+|I_0\rangle\langle K_{12}|\hat{0}_\alpha^+|I_0$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_1,K_{14})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^J0^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|1^J0^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{1}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|0^K1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{1}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|0^K1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{1}_\beta^+\hat{1}_\alpha^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\alpha^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\alpha^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{L}\sum_{J}\sum_{L}\sum_{K}\langle 0^I0^J|\hat{g}|0^K0^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_7,K_{14}} \\ &+ \frac{1}{12}\sum_{L}\sum_{L}\sum_{L}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{7},K_{14}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{7},K_{14}}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{7},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{7},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{7},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{7},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{7},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{7},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{7},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{7},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_2, K_{12})\rangle =$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{9},K_{12}}}{+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{9},K_{12}}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{9},K_{12}}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{9},K_{12}}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{a}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat$$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{9}, K_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{9}, K_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{9}, K_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{9}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{9}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{9}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{9}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{9}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_3, K_{12})\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 0^J 0^K \rangle \langle I_9 | \hat{0}_\alpha^- | I_0 \rangle \langle J_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | J_0 \rangle \langle K_{12} | \hat{0}_\alpha^+ | K_0 \rangle t_{A_1} t_{B_1,J_3} t_{I_9,K_{12}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{9}, K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\left\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{9},K_{12}}\right\rangle$ $\sum_{i=1}^{K} \sum_{j=1}^{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{9}, K_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{3}} t_{I_{9},K_{12}}$ $+ \frac{-1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 0^K 1^J \rangle \langle I_9 | \hat{0}_\alpha^- | I_0 \rangle \langle J_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | J_0 \rangle \langle K_{12} | \hat{0}_\alpha^+ | K_0 \rangle t_{A_1} t_{B_1,J_3} t_{I_9,K_{12}}$ $+\frac{1}{12}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{9},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{9},K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{9},K_{12}}$ $+ \frac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{3}} t_{I_{9}, K_{12}}$ $\sum_{i=1}^{J} \sum_{k=1}^{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{3}} t_{I_{9},K_{12}}$ $+ \frac{-1}{12} \sum_{i} \sum_{j} \sum_{i} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{3}} t_{I_{9},K_{12}}$ $+\frac{1}{12}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{9},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{S}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{9},K_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{9},K_{12}}$ $+ \frac{-1}{12} \sum_{i} \sum_{j} \sum_{i} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{3}} t_{I_{9},K_{12}}$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{3}|\hat{0}_$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_2, K_{14})\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 0^J 0^K \rangle \langle I_7 | \hat{0}^-_\beta | I_0 \rangle \langle J_2 | \hat{0}^+_\beta \hat{1}^-_\beta | J_0 \rangle \langle K_{14} | \hat{0}^+_\beta | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_7, K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{7},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{2}} t_{I_{7}, K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{2}} t_{I_{7}, K_{14}}$ $+\frac{-1}{12}\sum_{I}^{J}\sum_{I}^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{7},K_{14}}$ $+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^{I} 1^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{7},K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{K}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{7},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{2}} t_{I_{7}, K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{14}}$ $+\frac{1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{14}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{14}}\\ \end{aligned}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_3, K_{14})\rangle =$
$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{7},K_{14}} \end{split}$$
 $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{7},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{3}} t_{I_{7}, K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{7},K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{7},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{I} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{7} | \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{3} | \hat{0}^{+}_{\beta} \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{3}} t_{I_{7},K_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{3}} t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum^{1}\sum^{2}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{7},K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{7},K_{14}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{3}} t_{I_{7}, K_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{7},K_{14}}$ $+\frac{-1}{12}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{7},K_{14}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J | \hat{g} | 0^K 1^J \rangle \langle I_7 | \hat{0}_\beta^- | I_0 \rangle \langle J_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | J_0 \rangle \langle K_{14} | \hat{0}_\beta^+ | K_0 \rangle t_{B_1} t_{A_1,J_3} t_{I_7,K_{14}} + t_{A_1,J_3} t_{A_1,J_3} t_{A_2,K_{14}} + t_{A_2,J_3} t_{A_3,J_3} t_{A_3,J$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{7},K_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{7},K_{14}}$ $+\frac{1}{12}\sum_{i}^{I}\sum_{j}^{J}\sum_{k}^{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{7},K_{14}}$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{3}} t_{I_{7},K_{14}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{3}} t_{I_{7},K_{14}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{3}} t_{I_{7},K_{14}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{3}} t_{I_{7},K_{14}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_1, K_{12})\rangle =$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{10},K_{12}}$ $+\frac{-1}{12}\sum_{I=1}^{I}\sum_{J=1}^{I}\sum_{I=1}^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{10},K_{12}}$ $+\frac{-1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{10},K_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{10},K_{12}}$ $+\frac{-1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{10},K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\left\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{10},K_{12}}\right\rangle$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{10},K_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{1}} t_{I_{10},K_{12}}$ $+ \frac{-1}{12} \sum \sum \sum \langle 1^I 1^J | \hat{g} | 0^K 1^J \rangle \langle I_{10} | \hat{1}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle t_{A_1, B_1} t_{J_1} t_{I_{10}, K_{12}}$ $+\frac{1}{12}\sum_{\alpha}\sum_{\alpha}\sum_{\alpha}\langle 1^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{10},K_{12}}$ $+\frac{-1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{10},K_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{1}} t_{I_{10}, K_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{1}} t_{I_{10}, K_{12}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 1^I 1^J | \hat{g} | 0^K 1^J \rangle \langle I_{10} | \hat{1}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle t_{B_1} t_{A_1,J_1} t_{I_{10},K_{12}}$ $+\frac{1}{12}\sum_{I}\sum_{\alpha}\sum_{\alpha}\sum_{\alpha}\langle 1^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}(I^{I}I^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{12}}$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 0^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{1}} t_{I_{10}, K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{1}} t_{I_{10}, K_{12}} \end{split}$$

$$\begin{split} & \langle (A_1,B_1) | \hat{H} | (A_1,B_1,I_8,J_1,K_{14}) \rangle = \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^{I} O^{J} | \hat{g} | O^{J} O^{K} \rangle \langle I_{8} | \hat{1}_{\hat{\beta}} | I_{0} \rangle \langle J_{1} | \hat{0}_{\hat{\beta}}^{+} \hat{g}_{\hat{\beta}} | J_{0} \rangle \langle K_{14} | \hat{0}_{\hat{\beta}}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{1}} t_{I_{8},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^{I} O^{J} | \hat{g} | O^{J} O^{K} \rangle \langle I_{8} | \hat{1}_{\hat{\beta}} | I_{0} \rangle \langle J_{1} | \hat{1}_{\hat{\beta}}^{+} \hat{g}_{\hat{\beta}} | J_{0} \rangle \langle K_{14} | \hat{0}_{\hat{\beta}}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{1}} t_{I_{8},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^{I} O^{J} | \hat{g} | O^{K} O^{J} \rangle \langle I_{8} | \hat{1}_{\hat{\beta}} | I_{0} \rangle \langle J_{1} | \hat{0}_{\hat{\beta}}^{+} \hat{g}_{\hat{\beta}} | J_{0} \rangle \langle K_{14} | \hat{0}_{\hat{\beta}}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{1}} t_{I_{8},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^{I} O^{J} | \hat{g} | O^{K} O^{J} \rangle \langle I_{8} | \hat{1}_{\hat{\beta}} | I_{0} \rangle \langle J_{1} | \hat{0}_{\hat{\alpha}}^{+} \hat{g}_{\hat{\alpha}} | J_{0} \rangle \langle K_{14} | \hat{0}_{\hat{\beta}}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{1}} t_{I_{8},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^{I} O^{J} | \hat{g} | O^{K} O^{J} \rangle \langle I_{8} | \hat{1}_{\hat{\beta}} | I_{0} \rangle \langle J_{1} | \hat{1}_{\hat{\alpha}}^{+} \hat{g}_{\hat{\alpha}} | J_{0} \rangle \langle K_{14} | \hat{0}_{\hat{\beta}}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{1}} t_{I_{8},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^{I} O^{J} | \hat{g} | O^{K} O^{J} \rangle \langle I_{8} | \hat{1}_{\hat{\beta}} | I_{0} \rangle \langle J_{1} | \hat{0}_{\hat{\alpha}}^{+} \hat{g}_{\hat{\beta}} | J_{0} \rangle \langle K_{14} | \hat{0}_{\hat{\beta}}^{+} | K_{0} \rangle t_{A_{1},B_{1},J_{1}} t_{I_{8},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^{I} O^{J} | \hat{g} | O^{K} O^{J} \rangle \langle I_{8} | \hat{1}_{\hat{\beta}} | I_{0} \rangle \langle J_{1} | \hat{0}_{\hat{\beta}}^{+} \hat{g}_{\hat{\beta}} | J_{0} \rangle \langle K_{14} | \hat{0}_{\hat{\beta}}^{+} | K_{0} \rangle t_{A_{1},B_{1},J_{1}} t_{I_{8},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^{I} O^{J} | \hat{g} | O^{K} O^{J} \rangle \langle I_{8} | \hat{1}_{\hat{\beta}} | I_{0} \rangle \langle J_{1} | \hat{0}_{\hat{\beta}}^{+} \hat{g}_{\hat{\beta}} | J_{0} \rangle \langle K_{14} | \hat{0}_{\hat{\beta}}^{+} | K_{0} \rangle t_{A_{1},B_{1},L_{1},K_{14}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^{I} O^{J} | \hat{g} | O^{K} O^{J} \rangle \langle I_{8} | \hat{1}_{\hat{\beta}} | I_{0} \rangle \langle J_{1} | \hat{0}_{\hat{\beta}}^{+} \hat{g}_{\hat{\beta}} | J_{0} \rangle \langle K_{14} | \hat{0}_{\hat{\beta}}$$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 0^{J} 0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{2}} t_{I_{10}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{J} 0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{2}} t_{I_{10}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{2}} t_{I_{10}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{2}} t_{I_{10}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{2}} t_{I_{10}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B_{1}, J_{2}} t_{I_{10}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B_{1}, J_{2}} t_{I_{10}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B_{1}, J_{2}} t_{I_{10}, K_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_3,K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 1^J|\hat{g}|0^J 0^K\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^J 0^K\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|0^K 1^J\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_2,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 1^I 1^J |\hat{g}|0^J 0^K \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1} t_{B_1,J_2} t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|1^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle k_{A_{1}}t_{B_{1},J_{2}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle k_{A_{1}}t_{B_{1},J_{2}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle k_{A_{1}}t_{B_{1},J_{2}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle k_{A_{1}}t_{B_{1},J_{2}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle k_{A_{1}}t_{B_{1},J_{2}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle k_{A_{1},B_{1}}t_{J_{2}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle k_{A_{1},B_{1}}t_{J_{2}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_3,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J |\hat{g}|0^J 0^K \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_8,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J |\hat{g}|1^J 0^K \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_8,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^J |\hat{g}|0^K 1^J \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{S}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{4}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{A_{1},J_{3}}t_{I_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_1,K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}|0^J 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_9,K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}|1^J 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}|1^K 0^J \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}|1^K 1^J \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^J |\hat{g}|1^K 0^J \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_1,J_1} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_1,K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|1^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{1}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^K0^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^K0^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|1^K1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{1}_\beta^+\hat{1}_\alpha^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I1^J|\hat{g}|1^K1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_1}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{L}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_1}t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_2,K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|0^J 1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^J 1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_9,K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_9,K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_9,K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_9,K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^J 1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^J 1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^J 1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^J 1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_9,K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle I_0|\hat{0}_\alpha^+|I_0\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle I_1|\hat{0}_\alpha^+|I_0\rangle\langle I_1|\hat{0}_\alpha^+|I_0\rangle\langle I_1|\hat{0}_\alpha^+|I_0\rangle\langle I_1|\hat{0}_\alpha^-|I_0\rangle\langle I_1|\hat{0}_\alpha^-|I_0\rangle\langle I_1|\hat{0}_\alpha^-|I_0\rangle\langle I_1|\hat{0}_\alpha^-|I_0\rangle\langle I_1|\hat{0}_\alpha^-|I_0\rangle\langle I_1|\hat{0}_\alpha^-|I_0\rangle\langle I_1|\hat{0}_\alpha^-|I_0\rangle\langle I_$$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{K}1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{9},K_{11}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{K}1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{9},K_{11}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{K}1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{9},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{9},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{9},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{K}1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{9},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{K}1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{9},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{K}1^{J} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{9},K_{11}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 1^{J}1^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{9},K_{11}} \\ & + \frac{1}{12} \sum_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_3,K_{11})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I I^J|\hat{g}|0^J I^K\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^J I^K\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\beta^+\hat{1}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle \langle K_{11}|\hat{1}_\alpha^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_9,K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{L}\langle 0^I 0^J|\hat{g}|1^K I^J\rangle \langle I_9|\hat{0}_\alpha^-|I_0\rangle \langle I_1|\hat{0}_\alpha^-|I_0\rangle \langle I_1|\hat{0}_\alpha^-|I_0\rangle \langle I_1|\hat{0}_\alpha$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{9},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{9},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{9},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_2,K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 1^J|\hat{g}|0^J 1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^J 1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{1}_\beta^+\hat{0}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_1,J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\alpha^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\alpha^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\alpha^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I 0^J|\hat{g}|1^K 1^J\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\alpha^-|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1,B_1}t_{J_2}t_{I_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{13}}}{+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{13}}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{13}}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{13}}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_3, K_{13})\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 0^I 1^J | \hat{g} | 0^J 1^K \rangle \langle I_7 | \hat{0}^-_\beta | I_0 \rangle \langle J_3 | \hat{0}^+_\beta \hat{1}^-_\beta | J_0 \rangle \langle K_{13} | \hat{1}^+_\beta | K_0 \rangle t_{A_1} t_{B_1, J_3} t_{I_7, K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{7},K_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{3}}t_{I_{7},K_{13}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 0^I 0^J | \hat{g} | 1^K 1^J \rangle \langle I_7 | \hat{0}^-_\beta | I_0 \rangle \langle J_3 | \hat{0}^+_\alpha \hat{1}^-_\alpha | J_0 \rangle \langle K_{13} | \hat{1}^+_\beta | K_0 \rangle t_{A_1} t_{B_1,J_3} t_{I_7,K_{13}}$ $+ \frac{-1}{12} \sum \sum \sum \langle 0^I 0^J | \hat{g} | 1^K 1^J \rangle \langle I_7 | \hat{0}^-_\beta | I_0 \rangle \langle J_3 | \hat{1}^+_\beta \hat{0}^-_\beta | J_0 \rangle \langle K_{13} | \hat{1}^+_\beta | K_0 \rangle t_{A_1} t_{B_1,J_3} t_{I_7,K_{13}}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1},J_{3}} t_{I_{7},K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{7},K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{7},K_{13}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{3}} t_{I_{7}, K_{13}}$ $+ \tfrac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{3}} t_{I_{7},K_{13}}$ $+\frac{-1}{12}\sum^{\circ}\sum^{\circ}\sum^{\circ}\sum^{\circ}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{3}}t_{I_{7},K_{13}}$ $+ \frac{-1}{12} \sum_{-}^{-} \sum_{-}^{-} \sum_{-}^{-} \langle 0^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{7} | \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{3} | \hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{13} | \hat{1}^{+}_{\beta} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{3}} t_{I_{7},K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{7},K_{13}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{7},K_{13}}$ $+\frac{-1}{12}\sum_{I}^{J}\sum_{J}^{K}\sum_{I}^{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{7},K_{13}}$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{3}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{3}}t_{I_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}|$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_1, K_{11})\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 1^{I} 0^{J} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{1}} t_{I_{10}, K_{11}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum_{}^{1}\sum_{}^{1}\sum_{}^{1}\sum_{}^{1}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{10},K_{11}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{1}} t_{I_{10}, K_{11}}$ $+ \frac{1}{12} \sum \sum \sum \langle 1^I 0^J | \hat{g} | 0^J 1^K \rangle \langle I_{10} | \hat{1}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{11} | \hat{1}_{\alpha}^+ | K_0 \rangle t_{A_1,B_1} t_{J_1} t_{I_{10},K_{11}}$ $+\frac{1}{12}\sum_{1}\sum_{1}\sum_{1}\sum_{1}\left\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{10},K_{11}}\right.$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{10},K_{11}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{1}} t_{I_{10}, K_{11}}$ $+\frac{1}{12}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{10},K_{11}}$ $+\frac{1}{12}\sum_{1}\sum_{1}\sum_{1}\sum_{1}\sum_{1}\left\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{10},K_{11}}\right\rangle$ $+\frac{-1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{10},K_{11}}$ $+ \frac{-1}{12} \sum_{\sigma} \sum_{\sigma} \sum_{\sigma} \langle 1^I 0^J | \hat{g} | 1^K 0^J \rangle \langle I_{10} | \hat{1}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | J_0 \rangle \langle K_{11} | \hat{1}_{\alpha}^+ | K_0 \rangle t_{B_1} t_{A_1, J_1} t_{I_{10}, K_{11}}$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle I_{10}|\hat{1}_{\beta}^{+}|I_{10}\rangle\langle I_{10}|\hat{1}_{\beta}^{-}|I_{10}\rangle\langle I_{10}|\hat{1}_{\beta}^{-}|I_{10}\rangle\langle I_{10}|I_{10}|I_{10}|I_{10}|I_{10}|I_{10}|I_{10}|I_{10}|I_{10}|I_{10}|I_{10$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_1, K_{13})\rangle =$ $+ \frac{1}{12} \sum \sum \sum \langle 1^I 0^J | \hat{g} | 0^J 1^K \rangle \langle I_8 | \hat{1}^-_{\beta} | I_0 \rangle \langle J_1 | \hat{0}^+_{\beta} \hat{0}^-_{\beta} | J_0 \rangle \langle K_{13} | \hat{1}^+_{\beta} | K_0 \rangle t_{A_1} t_{B_1, J_1} t_{I_8, K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{8},K_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{8},K_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{8},K_{13}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}, J_{1}} t_{I_{8}, K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{1}}t_{I_{8},K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{8},K_{13}}$ $+ \frac{1}{12} \sum \sum \sum \langle 1^I 1^J | \hat{g} | 1^J 1^K \rangle \langle I_8 | \hat{1}^-_{\beta} | I_0 \rangle \langle J_1 | \hat{1}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle \langle K_{13} | \hat{1}^+_{\beta} | K_0 \rangle t_{A_1,B_1} t_{J_1} t_{I_8,K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{8},K_{13}}$ $+\frac{-1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{8},K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{8},K_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{1}}t_{I_{8},K_{13}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{1}} t_{I_{8}, K_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{8},K_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{8},K_{13}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 0^{J} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{1}} t_{I_{8},K_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{8},K_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{1}}t_{I_{8},K_{13}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{8},K_{13}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{1}}t_{I_{8},K_{13}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_2, K_{11})\rangle =$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{10},K_{11}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}K\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1},J_{2}}t_{I_{10},K_{11}}$ $+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}, B_{1}} t_{J_{2}} t_{I_{10}, K_{11}}$ $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{10},K_{11}}$ $\sum_{i=1}^{K} \sum_{j=1}^{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{10},K_{11}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum^{3}\sum^{3}\sum^{3}\sum^{3}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1},B_{1}}t_{J_{2}}t_{I_{10},K_{11}}$ $+ \frac{-1}{12} \sum_{} \sum_{} \sum_{} \sum_{} \sum_{} \sum_{} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1},B_{1}} t_{J_{2}} t_{I_{10},K_{11}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{10},K_{11}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{1},J_{2}}t_{I_{10},K_{11}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{10}, K_{11}}$ $+ \frac{-1}{12} \sum_{I}^{I} \sum_{J}^{I} \sum_{K}^{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1}, J_{2}} t_{I_{10}, K_{11}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{I} \sum_{I} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{1},J_{2}} t_{I_{10},K_{11}} + \frac{1}{12} \langle I_{10} | \hat{I}_{\alpha}^{-} | I_{10} \rangle \langle I_{10} | I_{10} \rangle \langle I_{10$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{10},K_{11}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{10},K_{11}}$ $+\frac{-1}{12}\sum_{I}^{J}\sum_{A}^{K}\sum_{A}^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{J}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J_{2}}t_{I_{10},K_{11}}$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{10}, K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{10}, K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{2}} t_{I_{10}, K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_3,K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 1^J|\hat{g}|0^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^K 1^J \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^K 1^J \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^K 1^J \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^K 1^J \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^K 1^J \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1}t_{B_1,J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^K 1^J \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1,B_1}t_{J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^K 1^J \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1,B_1}t_{J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^K 1^J \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1,B_1}t_{J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^K 1^J \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1,B_1}t_{J_3}t_{I_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \langle 1^I 0^J|\hat{g}|1^K 1^J \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{J} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{J_{3}} t_{I_{10}, K_{11}} dt_{A_{1}} dt_{A_{1}}$$

$$\begin{split} &\langle \langle A_1, B_1 \rangle | \hat{H} | (A_1, B_1, I_8, J_2, K_{13}) \rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} | 0^J I^K \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_8, K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} | 0^J I^J I^K \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_2 | \hat{1}_{\beta}^+ \hat{g}_{\beta}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_8, K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} | I^K I^J \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_8, K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} | I^K I^J \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_8, K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} | I^K I^J \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_2 | \hat{1}_{\beta}^+ \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_8, K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} | I^K I^J \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_2 | \hat{1}_{\beta}^+ \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1} t_{B_1, J_2} t_{I_8, K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} | I^K I^J \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1, B_1} t_{J_2} t_{I_8, K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} | I^J K^+ \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1, B_1} t_{J_2} t_{I_8, K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} | I^J K^+ \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1, B_1} t_{J_2} t_{I_8, K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} | I^J K^+ \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{A_1, B_1} t_{J_2} t_{I_8, K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle I^1 I^J | \hat{g} |$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_3,K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 1^I 1^J|\hat{g}|0^J 1^K \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\beta}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|J^1 K^N \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\beta}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|I^K 1^J \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\beta}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|K^1 J^J \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|K^1 J^J \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{1}_{\bar{\alpha}}^+\hat{0}_{\bar{\alpha}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|K^1 J^J \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{0}_{\bar{\alpha}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1}t_{B_1,J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|T^K \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|T^K \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|T^K \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{0}_{\bar{\alpha}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|T^K \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{0}_{\bar{\alpha}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|T^K \rangle \langle I_8|\hat{1}_{\bar{\beta}}^-|I_0\rangle \langle J_3|\hat{0}_{\bar{\alpha}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle \langle K_{13}|\hat{1}_{\bar{\beta}}^+|K_0\rangle t_{A_1,B_1}t_{J_3}t_{I_8,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle (1^I 0^J|\hat{g})|T^K \rangle \langle I_8|\hat{1}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{12}, K_1)\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left(\partial^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{9},J_{12}}t_{+\frac{1}{12}}\right) \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left(\partial^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{9},J_{12}}t_{+\frac{1}{12}}\right) \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left(\partial^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{9},J_{12}}t_{+\frac{1}{12}}\right) \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left(\partial^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{9},J_{12}}t_{+\frac{1}{12},I_{1}}\right) \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left(\partial^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{9},J_{12}}t_{+\frac{1}{12},I_{1}}\right) \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left(\partial^{I}0^{M}|\hat{g}|0^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{9},J_{12}}t_{+\frac{1}{12},I_{1}}\right) \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left(\partial^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{9},J_{12}}\right) \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left(\partial^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{9},J_{12}}\right) \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left(\partial^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{9},J_{2}}\right) \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left(\partial^{I}0^{J}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{A_{1},K_{1}}t_{I_{9},J_{2}}\right) \\ &+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{14},K_1)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^K |\hat{g}|0^J 0^K \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_1 |\hat{0}^+_{\beta} \hat{0}^-_{\beta} |K_0\rangle t_{A_1} t_{B_1,K_1} t_{I_7,J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{L} \sum_{K} \langle 0^I 1^K |\hat{g}|0^J 1^K \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_1 |\hat{1}^+_{\beta} \hat{1}^-_{\beta} |K_0\rangle t_{A_1} t_{B_1,K_1} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{12},K_2)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_9,J_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\beta^+\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_9,J_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_9,J_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_2|\hat{1}_\beta^+\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_9,J_{12}} \end{split}$$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | 0^{K} I^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{O} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{a}_{\alpha}^{-} | K_{O} t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{9}, J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{J} | \hat{g} | I^{K}0^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{O} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{O} t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{9}, J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{K} | \hat{g} | 0^{J} I^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{O} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{a}_{\alpha}^{-} | K_{O} t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{9}, J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{K} | \hat{g} | 0^{J} I^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{O} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{a}_{\alpha}^{-} | K_{O} t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{9}, J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{K} | \hat{g} | 0^{J} I^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{O} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{a}_{\alpha}^{-} | K_{O} t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{9}, J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{K} | \hat{g} | 0^{J} I^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{O} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{a}_{\alpha}^{-} | K_{O} t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{9}, J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 0^{I}0^{K} | \hat{g} | 0^{J} I^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{O} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{a}_{\alpha}^{-} | K_{O} t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{9}, J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 0^{I}0^{K} | \hat{g} | 0^{J} I^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{O} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{a}_{\alpha}^{-} | K_{O} t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{9}, J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 0^{I}0^{K} | \hat{g} | 0^{J} I^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{O} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{O} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{a}_{\alpha}^{-} | K_{O} t_{B_{1}} t_{A_{1}, K_{2}} t_{I_{9}, J_{12}} \\$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{12},K_3)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_9,J_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_9,J_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_3|\hat{1}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_9,J_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_3|\hat{1}_\beta^+\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_9,J_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K1^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_3|\hat{1}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_9,J_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^K0^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_3|\hat{1}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_9,J_{12}} \\ &+ \frac{1}{12}\sum_{J}\sum_{L}\sum_{K}\langle 0^I0^J|\hat{g}|1^K0^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_3|\hat{1}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_9,J_{12}} \\ &+ \frac{1}{12}\sum_{L}\sum_{L}\sum_{L}\sum_{L}\sum_{L}\langle 0^I0^J|\hat{g}|1^K0^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_3|\hat{1}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_9,J_{12}} \\ &+ \frac{1}{12}\sum_{L}\sum_{L}\sum_{L}\sum_{L}\sum_{L}\langle 0^I0^J|\hat{g}|1^K0^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle I_12|\hat{0}_\alpha^+|I_0\rangle\langle I_12|\hat{0}_\alpha^-|I_0\rangle\langle I_12|\hat{0}_\alpha^-|I_0\rangle\langle I_12|\hat{0}_\alpha^-|I_0\rangle\langle I_12|\hat{0}_$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{9},J_{12}}\right.\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{9},J_{12}}\right.\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{9},J_{12}}\right.\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{9},J_{12}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{9},J_{12}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{9},J_{12}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{A_{1},K_{3}}t_{I_{9},J_{12}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{9},J_{12}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{9},J_{12}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{9},J_{12}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X} \left\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{14},K_2)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_7,J_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_7,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K1^K\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_7,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^K0^K\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_7,J_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_7,J_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_7,J_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_7,J_{14}} \\ &+ \frac{-1}{12}\sum_{L}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|K_0\rangle t_{A_1,B_1}t_{A_2}t_{A_1,B_1}t_{A_2}t_{A_2,A_2}t_{A_2,A_2}t_{A_2,A_2}t_{A_2,A_2}t_{A_2,A_2}t_{A_2,A_2}t_{A_2,A_$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{14},K_3)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_7,J_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{1}_\beta^+\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_7,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_7,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|1^K0^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{1}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_7,J_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_7,J_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_1,K_3}t_{I_7,J_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{1}_\beta^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_7,J_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{1}_\beta^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_7,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^K|\hat{g}|0^J1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{1}_\beta^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_7,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{1}_\beta^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_7,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_7,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{K_3}t_{I_7,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^I0^J|\hat{g}|0^K1^K\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_3|\hat{0}_\beta^+\hat{0}_\beta^-|K_0\rangle t_{A_1,B_1}t_{A_2,A_1} \\ &+ \frac{1}{12}\sum_{J}\sum_{L}\langle 0^I0^J|\hat{g}|$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{7},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{7},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{7},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{7},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{7},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_1)\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|0^J0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_{10},J_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|0^J0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_{10},J_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|0^J1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_{10},J_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|0^J1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_{10},J_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^J|\hat{g}|0^K0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_{10},J_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^J|\hat{g}|1^K1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_{10},J_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|0^J0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_{10},J_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|0^J0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_{10},J_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|0^J1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_{10},J_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|0^J1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_{10},J_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^J|\hat{g}|0^K0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_{10},J_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{K}\langle 1^I0^J|\hat{g}|0^K0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_{10},J_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{K}\langle 1^$$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 0^{J}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},K_{1}} t_{I_{10},J_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 0^{J}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},K_{1}} t_{I_{10},J_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}1^{K} | \hat{g} | 0^{J}1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},K_{1}} t_{I_{10},J_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{J} | \hat{g} | 0^{K}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},K_{1}} t_{I_{10},J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{J} | \hat{g} | 0^{K}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},K_{1}} t_{I_{10},J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 0^{J}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{K_{1}} t_{I_{10},J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 0^{J}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{K_{1}} t_{I_{10},J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 0^{J}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{K_{1}} t_{I_{10},J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{J} \sum_{K} \langle 1^{I}0^{K} | \hat{g} | 0^{J}0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{14},K_1)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|0^J0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|0^J1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^J|\hat{g}|0^K0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^J|\hat{g}|1^K1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|0^J0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|0^J1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_8,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|0^J1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_8,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|0^J1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_8,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^J|\hat{g}|0^K0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_8,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|0^J0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{8},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{8},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{8},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_{12}, K_2)\rangle =$ $+ \frac{-1}{12} \sum \sum \sum \langle 1^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{10} | \hat{1}^-_\alpha | I_0 \rangle \langle J_{12} | \hat{0}^+_\alpha | J_0 \rangle \langle K_2 | \hat{0}^+_\alpha \hat{1}^-_\alpha | K_0 \rangle t_{A_1} t_{B_1, K_2} t_{I_{10}, J_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{10}, J_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{10},J_{12}}$ $\sum_{i=1}^{J} \sum_{k=1}^{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{10}, J_{12}}$ $\sum \sum \langle 1^I 0^J | \hat{g} | 0^K 1^K \rangle \langle I_{10} | \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1, K_2} t_{I_{10}, J_{12}}$ $+ \tfrac{1}{12} \sum \sum \sum \langle 1^I 0^J | \hat{g} | 1^K 0^K \rangle \langle I_{10} | \hat{1}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle \langle K_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | K_0 \rangle t_{A_1} t_{B_1, K_2} t_{I_{10}, J_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{\alpha} \sum_{\alpha} \sum_{\alpha} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{2}} t_{I_{10},J_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{\Lambda}\sum_{\Lambda}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{10},J_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{10},J_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{2}} t_{I_{10},J_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{10},J_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{G}\sum^{I}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{10},J_{12}}$ $+ \frac{-1}{12} \sum_{\alpha} \sum_{\alpha} \sum_{\alpha} \sum_{\beta} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{2}} t_{I_{10}, J_{12}}$ $+\frac{-1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{10},J_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{10},J_{12}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \langle 1^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{10} | \hat{1}^-_\alpha | I_0 \rangle \langle J_{12} | \hat{0}^+_\alpha | J_0 \rangle \langle K_2 | \hat{1}^+_\beta \hat{0}^-_\beta | K_0 \rangle t_{B_1} t_{A_1, K_2} t_{I_{10}, J_{12}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{10},J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{10},J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{10},J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{10},J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{11}|I_{0}\rangle\langle I_{11}|I_{0}\rangle\langle I_{12}|I_{0}\rangle\langle I_{11}|I_{0}\rangle\langle I_{11}|I_{0}\rangle\langle I_{11}|I_{0}\rangle\langle I_{11}|I_{0}\rangle\langle I_{12}|\hat{$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_{12}, K_3)\rangle =$ $+ \frac{-1}{12} \sum \sum \sum \langle 1^I 0^K | \hat{g} | 0^J 1^K \rangle \langle I_{10} | \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1, K_3} t_{I_{10}, J_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{3}} t_{I_{10}, J_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{10},J_{12}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{3}} t_{I_{10}, J_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{10},J_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{10},J_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{10},J_{12}}$ $+\frac{-1}{12}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{10},J_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{10},J_{12}}$ $+\frac{-1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{10},J_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{10},J_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{10},J_{12}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{10},J_{12}}$ $+ \frac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},K_{3}} t_{I_{10},J_{12}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1},K_{3}} t_{I_{10},J_{12}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{10},J_{12}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{10},J_{12}}$ $+\frac{1}{12}\sum_{I}\sum_{\sigma}\sum_{i=1}^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{10},J_{12}}$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{12}}\\ \end{aligned}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{14}, K_2)\rangle =$
$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{8}, J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{8}, J_{14}} \end{split}$$
 $+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{8},J_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{8},J_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{8}, J_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{2}} t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{8},J_{14}}$ $+ \tfrac{1}{12} \sum_{I} \sum_{K} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{2}} t_{I_{8},J_{14}}$ $+ \frac{1}{12} \sum_{}^{} \sum_{}^{} \sum_{}^{} \sum_{}^{} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 0^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{2}} t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{8},J_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{2}} t_{I_{8}, J_{14}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{2}} t_{I_{8}, J_{14}}$ $+\frac{1}{12}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}X\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{14}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{14}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{14}, K_3)\rangle =$
$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{3}} t_{I_{8}, J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{3}} t_{I_{8}, J_{14}} \end{split}$$
 $+ \tfrac{1}{12} \sum_{} \sum_{} \sum_{} \sum_{} \langle 1^I 0^J | \hat{g} | 0^K 1^K \rangle \langle I_8 | \hat{1}^-_\beta | I_0 \rangle \langle J_{14} | \hat{0}^+_\beta | J_0 \rangle \langle K_3 | \hat{0}^+_\beta \hat{1}^-_\beta | K_0 \rangle t_{A_1} t_{B_1, K_3} t_{I_8, J_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{8},J_{14}}$ $+ \frac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{14} | \hat{0}^{+}_{\beta} | J_{0} \rangle \langle K_{3} | \hat{1}^{+}_{\beta} \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{3}} t_{I_{8},J_{14}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{3}} t_{I_{8},J_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{8},J_{14}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{14} | \hat{0}^{+}_{\beta} | J_{0} \rangle \langle K_{3} | \hat{0}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{3}} t_{I_{8},J_{14}}$ $+\frac{-1}{12}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{8},J_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{I} \sum_{J} \sum_{I} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{3}} t_{I_{8}, J_{14}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{8},J_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{8},J_{14}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 0^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{3}} t_{I_{8}, J_{14}}$ $+ \frac{-1}{12} \sum_{I}^{J} \sum_{I}^{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{3}} t_{I_{8}, J_{14}}$ $+\frac{-1}{12}\sum_{I}^{J}\sum_{I}^{J}\sum_{K}^{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{8},J_{14}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{K_{3}} t_{I_{8}, J_{14}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{8},J_{14}}$ $+\frac{1}{12}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{8},J_{14}}$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{K_{3}} t_{I_{8},J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}} t_{K_{3}} t_{I_{8},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_0,J_{11},K_1)\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I0^K|\hat{g}|1^J0^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_0,J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I0^K|\hat{g}|1^J0^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_0,J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^K|\hat{g}|1^J1^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_0,J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^K|\hat{g}|1^J1^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_0,J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^J|\hat{g}|0^K0^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^J|\hat{g}|0^K0^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I0^K|\hat{g}|1^J0^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I0^K|\hat{g}|1^J0^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^K|\hat{g}|1^J1^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{B_1}t_{A_1,K_1}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^K|\hat{g}|1^J1^K\rangle\langle I_0|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{B_1}t_{A_1,K_1}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^K|\hat{g}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{13},K_1)\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I0^K|\hat{g}|1^J0^K\rangle\langle I_7|\hat{0}_{\bar{g}}|I_0\rangle\langle J_{13}|\hat{1}_{\bar{g}}^{\dagger}|J_0\rangle\langle K_1|\hat{0}_{\bar{g}}^{\dagger}\hat{0}_{\bar{g}}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_7,J_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^K|\hat{g}|1^J1^K\rangle\langle I_7|\hat{0}_{\bar{g}}^{\dagger}|I_0\rangle\langle J_{13}|\hat{1}_{\bar{g}}^{\dagger}|J_0\rangle\langle K_1|\hat{0}_{\bar{g}}^{\dagger}\hat{0}_{\bar{g}}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_7,J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^J|\hat{g}|0^K0^K\rangle\langle I_7|\hat{0}_{\bar{g}}^{\dagger}|I_0\rangle\langle J_{13}|\hat{1}_{\bar{g}}^{\dagger}|J_0\rangle\langle K_1|\hat{0}_{\bar{g}}^{\dagger}\hat{0}_{\bar{g}}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_7,J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^J|\hat{g}|1^K1^K\rangle\langle I_7|\hat{0}_{\bar{g}}|I_0\rangle\langle J_{13}|\hat{1}_{\bar{g}}^{\dagger}|J_0\rangle\langle K_1|\hat{0}_{\bar{g}}^{\dagger}\hat{0}_{\bar{g}}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_7,J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^K|\hat{g}|1^J0^K\rangle\langle I_7|\hat{0}_{\bar{g}}|I_0\rangle\langle J_{13}|\hat{1}_{\bar{g}}^{\dagger}|J_0\rangle\langle K_1|\hat{0}_{\bar{g}}^{\dagger}\hat{0}_{\bar{g}}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_7,J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^K|\hat{g}|1^J1^K\rangle\langle I_7|\hat{0}_{\bar{g}}|I_0\rangle\langle J_{13}|\hat{1}_{\bar{g}}^{\dagger}|J_0\rangle\langle K_1|\hat{0}_{\bar{g}}^{\dagger}\hat{0}_{\bar{g}}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_7,J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^K|\hat{g}|1^J1^K\rangle\langle I_7|\hat{0}_{\bar{g}}|I_0\rangle\langle J_{13}|\hat{1}_{\bar{g}}^{\dagger}|J_0\rangle\langle K_1|\hat{0}_{\bar{g}}^{\dagger}\hat{0}_{\bar{g}}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_7,J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^J|\hat{g}|0^K0^K\rangle\langle I_7|\hat{0}_{\bar{g}}|I_0\rangle\langle J_{13}|\hat{1}_{\bar{g}}^{\dagger}|J_0\rangle\langle K_1|\hat{0}_{\bar{g}}^{\dagger}\hat{0}_{\bar{g}}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_7,J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I1^K|\hat{g}|1^J1^K\rangle\langle I_7|\hat{0}_{\bar{g}}|I_0\rangle\langle J_{13}|\hat{1}_{\bar{g}}^{\dagger}|J_0\rangle\langle K_1|\hat{0}_{\bar{g}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,J_0,J_{11},K_2)\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I 0^K|\hat{g}|I^J^I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_0,J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I 0^K|\hat{g}|I^J^I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\beta^+\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_0,J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I 0^K|\hat{g}|I^J^I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_0,J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I 0^K|\hat{g}|I^J^I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I I^J|\hat{g}|K^I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I I^J|\hat{g}|K^I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I I^J|\hat{g}|I^J^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I I^K|\hat{g}|I^J^I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I I^K|\hat{g}|I^J^I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I I^J|\hat{g}|I^K I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I I^J|\hat{g}|I^K I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I I^J|\hat{g}|I^K I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1,B_1}t_{A_1,K_2}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^I I^K|\hat{g}|I^J I^K\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{11}|\hat{1}_\alpha^+|J_0\rangle\langle K_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|K_0\rangle t_{A_1,B_1}t_{A_1,K_2}t_{I_0,J_{11}} \\ &+\frac{1}{12}\sum_$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{11}, K_3)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^K | \hat{g} | 1^J 1^K \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_1, K_3} t_{I_9, J_{11}}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{0}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{g_{9},J_{11}}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{0}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{g_{9},J_{11}}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{0}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{g_{9},J_{11}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{g_{9},J_{11}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{g_{9},J_{11}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{g_{9},J_{11}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{g_{9},J_{1}}\right.\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\left\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{13},K_2)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^K |\hat{g}| 1^J 1^K \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle \langle K_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_1,K_2} t_{I_7,J_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 0^K |\hat{g}| 1^J 1^K \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle \langle K_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_1,K_2} t_{I_7,J_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^I 1^J |\hat{g}| 0^K 1^K \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle \langle K_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_1,K_2} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{K} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle k_{A_{1}} t_{B_{1}, K_{2}} t_{I_{7}, J_{13}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle k_{A_{1}} t_{B_{1}, K_{2}} t_{I_{7}, J_{13}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle k_{A_{1}} t_{B_{1}, K_{2}} t_{I_{7}, J_{13}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle k_{A_{1}, B_{1}} t_{K_{2}} t_{I_{7}, J_{13}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{7}, J_{13}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{7}, J_{13}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{L} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{7}, J_{13}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{L} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{7}, J_{13}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{2}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{7},J_{13},K_{3})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{7},J_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{7},J_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{7},J_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{7},J_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{7},J_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{7},J_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{X}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{11},K_{1})\rangle = \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{10},J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{10},J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{10},J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{10},J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{10},J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{10},J_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{1}}t_{I_{10},J_{11}} \\ &+\frac{-1}{12}\sum_{L}\sum_{L}\sum_{L}\sum_{L}\langle$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{A_{1},K_{1}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{13},K_1)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|1^J1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^J|\hat{g}|0^K0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^J|\hat{g}|1^K1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|1^J1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|1^J1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_8,J_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^K|\hat{g}|1^J1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_8,J_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^J|\hat{g}|0^K0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_8,J_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^J|\hat{g}|0^K0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_8,J_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^J|\hat{g}|0^K0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1,B_1}t_{K_1}t_{I_8,J_{13}} \\ &+ \frac{1}{12}\sum_{J}\sum_{K}\langle 1^I1^J|\hat{g}|0^K0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{1}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{1}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{1}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11},K_2)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{10},J_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{10},J_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{10},J_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^J|\hat{g}|0^K1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I1^J|\hat{g}|1^K0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_1,K_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|1^J1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|0^K1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^I0^K|\hat{g}|0^K1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0\rangle t_{A_1,B_1}t_{K_2}t_{I_{10},J_{11}} \\ &+ \frac{1}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11},K_3)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}| 1^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_1,K_3} t_{I_{10},J_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}| 1^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_1,K_3} t_{I_{10},J_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}| 1^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_1,K_3} t_{I_{10},J_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}| 1^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_1,K_3} t_{I_{10},J_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J |\hat{g}|0^K 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_1,K_3} t_{I_{10},J_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 1^J |\hat{g}|0^K 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_1,K_3} t_{I_{10},J_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}|1^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1,B_1} t_{K_3} t_{I_{10},J_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}|1^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1,B_1} t_{K_3} t_{I_{10},J_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}|1^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1,B_1} t_{K_3} t_{I_{10},J_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}|1^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1,B_1} t_{K_3} t_{I_{10},J_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^I 0^K |\hat{g}|1^J 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1,B_1} t_{K_3} t_{I_{10},J_$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{K}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{13}, K_2)\rangle =$ $+ \tfrac{-1}{12} \sum \sum \sum \langle 1^I 0^K | \hat{g} | 1^J 1^K \rangle \langle I_8 | \hat{1}^-_\beta | I_0 \rangle \langle J_{13} | \hat{1}^+_\beta | J_0 \rangle \langle K_2 | \hat{0}^+_\beta \hat{1}^-_\beta | K_0 \rangle t_{A_1} t_{B_1, K_2} t_{I_8, J_{13}}$ $+ \frac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{8}, J_{13}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{8}, J_{13}}$ $\sum \sum \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 0^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{1}, K_{2}} t_{I_{8}, J_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{8},J_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{2}}t_{I_{8},J_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{2}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{8},J_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{8},J_{13}}$ $+ \tfrac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{A_{1}, B_{1}} t_{K_{2}} t_{I_{8}, J_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{8},J_{13}}$ $+\frac{-1}{12}\sum^{J}\sum^{K}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{2}}t_{I_{8},J_{13}}$ $+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{2}} t_{I_{8},J_{13}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \sum_{I} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{2}} t_{I_{8}, J_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{8},J_{13}}$ $+\frac{1}{12}\sum^{\prime}\sum^{\prime}\sum^{\prime}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{8},J_{13}}$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{2}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{L}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{2}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{L}\sum_{L}\sum_{L}\sum_{L}\langle 1^{L}0^{K}|\hat{g}|1^{L}0^{L}0^{K}|\hat{g}|1^{L}0^{L}0^{L}0^{L}0^{L}0^{L}0^{L$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{13}, K_3)\rangle =$ $+ \tfrac{-1}{12} \sum \sum \sum \langle 1^I 0^K | \hat{g} | 1^J 1^K \rangle \langle I_8 | \hat{1}^-_\beta | I_0 \rangle \langle J_{13} | \hat{1}^+_\beta | J_0 \rangle \langle K_3 | \hat{0}^+_\beta \hat{1}^-_\beta | K_0 \rangle t_{A_1} t_{B_1, K_3} t_{I_8, J_{13}}$ $+\frac{-1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{8},J_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{8},J_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1},K_{3}}t_{I_{8},J_{13}}$ $+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle \langle K_{3} | \hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{1},K_{3}} t_{I_{8},J_{13}}$ $+\frac{-1}{12}\sum^{\bullet}\sum^{\bullet}\sum^{\bullet}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{8},J_{13}}$ $+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{I} \sum_{J} \sum_{I} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{3}} t_{I_{8},J_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{8},J_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{8},J_{13}}$ $+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1},B_{1}}t_{K_{3}}t_{I_{8},J_{13}}$ $+ \tfrac{-1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 1^{K} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle \langle K_{3} | \hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{A_{1},B_{1}} t_{K_{3}} t_{I_{8},J_{13}}$ $+\frac{-1}{12}\sum^{J}\sum^{J}\sum^{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{8},J_{13}}$ $+ \tfrac{-1}{12} \sum_{1}^{\infty} \sum_{1}^{\infty} \sum_{1}^{\infty} \langle 1^I 0^K | \hat{g} | 1^J 1^K \rangle \langle I_8 | \hat{1}^-_{\beta} | I_0 \rangle \langle J_{13} | \hat{1}^+_{\beta} | J_0 \rangle \langle K_3 | \hat{1}^+_{\beta} \hat{0}^-_{\beta} | K_0 \rangle t_{B_1} t_{A_1, K_3} t_{I_8, J_{13}}$ $+\frac{1}{12}\sum^{I}\sum^{J}\sum^{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{8},J_{13}}$ $+ \frac{1}{12} \sum^{I} \sum^{J} \sum^{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 0^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{1}, K_{3}} t_{I_{8}, J_{13}}$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{1},K_{3}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{1}}t_{K_{3}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{K}\rangle\langle I_{8}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{13}|\hat{0}_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(B_{1},I_{12},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{A}|\hat{g}|0^{I}0^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(B_{1},I_{14},J_{7})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{A}0^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{A}|\hat{g}|0^{I}0^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{A}|\hat{g}|0^{I}0^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_{12},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^A 1^J \rangle \langle A_0 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{B_1} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{10}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{10}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(B_{1},I_{14},J_{8})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{8}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{8}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_{12},J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^A 0^J \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2,B_1} t_{I_{12},J_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^A 0^J \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2,B_1} t_{I_{12},J_9} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^A |\hat{g}| 0^J 0^I \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2,B_1} t_{I_{12},J_9} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^A |\hat{g}| 0^I 0^J \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2,B_1} t_{I_{12},J_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^A 0^J \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2,B_1} t_{I_{12},J_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^A 0^J \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2,B_1} t_{I_{12},J_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^A 0^J \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2} t_{B_1} t_{I_{12},J_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^A 0^J \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2} t_{B_1} t_{I_{12},J_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^A 0^J \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2} t_{B_1} t_{I_{12},J_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^A 0^J \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2} t_{B_1} t_{I_{12},J_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^A 0^J \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_9 |\hat{0}_{\alpha}^{-} |J_0 \rangle t_{A_2} t_{B_1} t_{I_{12},J_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_{12},J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I0^J\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_{14},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 0^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle$$

$$+ \tfrac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^A | \hat{g} | 0^I 0^J \rangle \langle A_2 | \hat{1}^+_\beta \hat{0}^-_\beta | A_1 \rangle \langle I_{14} | \hat{0}^+_\beta | I_0 \rangle \langle J_7 | \hat{0}^-_\beta | J_0 \rangle t_{A_2} t_{B_1} t_{I_{14}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_{14},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^I\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^J\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^J\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^J\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{2},B_{1},I_{12},J_{10})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{12},J_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{12},J_{10}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{J}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{12},J_{10}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{12},J_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{12},J_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{12},J_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{12},J_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{12},J_{10}} \\ &$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{12},J_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_{12},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|1^J0^I\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I1^J\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\beta}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_{14},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|1^J0^I\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}^+_{\beta}|\hat{0}^-_{\alpha}|A_1\rangle\langle I_$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{J}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_{14},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|1^J0^I\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I1^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(B_{1},I_{11},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{A}0^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{A}|\hat{g}|1^{I}0^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{A}|\hat{g}|1^{I}0^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{A}0^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(B_{1},I_{13},J_{7})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{A}0^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{13},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{A}0^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{13},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{13},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{13},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{A}|\hat{g}|1^{I}0^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{13},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{A}|\hat{g}|1^{I}0^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{13},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(B_{1},I_{11},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{A}|\hat{g}|1^{I}1^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{A}|\hat{g}|1^{I}1^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_{13},J_8)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^A 1^J\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\alpha}^{-}|J_0\rangle t_{B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^A 1^J\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{B_1}t_{I_{13},J_8} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^A|\hat{g}|1^I 1^J\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{B_1}t_{I_{13},J_8} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^A|\hat{g}|1^I 1^J\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{B_1}t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_{11},J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^A 0^J \rangle \langle A_2 |\hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |A_1\rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle t_{A_2,B_1} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{11},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{11},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{11},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{J}0^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{11},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_{11},J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_1I}|\hat{g}|1^{A_0J}\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_1I}|\hat{g}|1^{A_0J}\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A_1A}|\hat{g}|0^{J}I^{I}\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A_1A}|\hat{g}|1^{I}0^{J}\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_1I}|\hat{g}|1^{A_0J}\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3,B_1}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_1I}|\hat{g}|1^{A_0J}\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_1I}|\hat{g}|1^{A_0J}\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_1I}|\hat{g}|1^{A_0J}\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_1I}|\hat{g}|1^{A_0J}\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_3}t_{B_1}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_1I}|\hat{g}|1^{A_0J}\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}$$

$$\langle (A_1, B_1)|\hat{H}|(A_2, B_1, I_{13}, J_7)\rangle =$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{13},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{13},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_{13},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_{13},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|0^J 1^I\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_{13},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^I 0^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_3|\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_{11},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2,B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2,B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^J 1^J\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2,B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^J 1^J\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2,B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_\beta\hat{1}^-_\beta|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2,B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2,B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2}t_{B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2}t_{B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^J 1^J\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2}t_{B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^J 1^J\rangle\langle A_2|\hat{0}^+_\alpha\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2}t_{B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_\beta\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2}t_{B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_\beta\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2}t_{B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_\beta\hat{1}^-_\alpha|A_1\rangle\langle I_{11}|\hat{1}^+_\alpha|I_0\rangle\langle J_{10}|\hat{1}^-_\alpha|J_0\rangle t_{A_2}t_{B_1}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_\beta\hat{1}^-_\alpha|A_1\rangle\langle I_{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_{11},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^A 1^J \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_3,B_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^A 1^J \rangle \langle A_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_3,B_1} t_{I_{11},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^A | \hat{g} | 1^J 1^I \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_3,B_1} t_{I_{11},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^A | \hat{g} | 1^I 1^J \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_3,B_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^A 1^J \rangle \langle A_3 | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_3,B_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^A 1^J \rangle \langle A_3 | \hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_3,B_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^A 1^J \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_3} t_{B_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^A 1^J \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_3} t_{B_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^A 1^J \rangle \langle A_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_3} t_{B_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^A 1^J \rangle \langle A_3 | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_3} t_{B_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^A 1^J \rangle \langle A_3 | \hat{0}_{\beta}^{+} \hat{1}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_{13},J_8)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|1^J1^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|1^I1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2,B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_{13},J_8} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_2}t_{B_1}t_{I_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_{13},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3,B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3,B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3,B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3,B_1} t_{I_{13},J_8} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^A |\hat{g}|1^J 1^J \rangle \langle A_3|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3,B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^A |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3} t_{B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{0}_{\beta}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3} t_{B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3} t_{B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3} t_{B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3} t_{B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3} t_{B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^A 1^J \rangle \langle A_3|\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_3} t_{B_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_1,J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^I0^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^I0^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_1,J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^I0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^I0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^J1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^J1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle I_1|\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{1}|\hat{1}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{1}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_1,J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{1}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+|A_1\rangle\langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_1,J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^I1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^I1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^J1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^J1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^I1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{1}|\hat{1}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_2,J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^I0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^I0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},J_9}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^I0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{B_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_2|\hat{0}_{\alpha}^{+$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{3},J_{9})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{1},I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{1},I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_2,J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A_0I}|\hat{g}|1^{I_0J}\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A_1I}|\hat{g}|0^{I_0J}\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_0I}|\hat{g}|1^{I_0J}\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{3},J_{7})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{1},I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{1},I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_2,J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^I1^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{12},J_{10}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}|A_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{3},J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{1},I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_2,J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^I1^J\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_{14},J_8}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^I1^J\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_{14},J_8}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^I\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_{14},J_8}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^I\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_{14},J_8}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^I\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_{14},J_8}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^I\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_{14},J_8}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_{14}|\hat{0}_{\beta}^+|A_1\rangle\langle I_2|\hat{0}_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{3},J_{8})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{1},I_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}1^{J}\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{1},I_{3}} \\ &+ \frac{1}{4}\sum_{J}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}1^{J}\langle A_{14}|\hat{0}_{\beta}^{+}|A_{14}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}|A_{14}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}|A_{14}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}|A_{14}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}|A_{14}\rangle\langle I_{3}|$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_1,J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{1},I_{1}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{1},I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{1},I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{1},I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{1},I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{1},I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_1,J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^I0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^I0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_1,I_1} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{7}}t_{B_{1},I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_1,J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A_0I}|\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A_1I}|\hat{g}|1^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A_0I}|\hat{g}|1^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A_0I}|\hat{g}|1^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A_1I}|\hat{g}|1^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A_1I}|\hat{g}|1^J 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A_0I}|\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A_0I}|\hat{g}|1^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A_0I}|\hat{g}|1^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A_0I}|\hat{g}|1^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A_1I}|\hat{g}|1^J 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A_1I}|\hat{g}|1^J 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_1|\hat{1}^+_{\alpha}|A_1 \rangle \langle I$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{1},J_{8})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{1}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{1}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{1}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{J}1^{J}\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{J}1^{J}\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{J}1^{J}\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{J}\sum_{J}\langle 1^{A}1^{J}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle A_{13}|\hat{1}_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_2,J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|1^{I_0J}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A_1I}|\hat{g}|0^{I_0J}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},J_9}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|1^{I_0J}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A_0I}|\hat{g}|0^{J_1I}\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_3,J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^I 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|0^I 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9} t_{B_1,I_3} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{1},I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{1},I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{1},I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_$$

$$\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_2,J_7)\rangle = \\ + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 1^I 0^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{A_{13},J_7} t_{B_1,I_2} \\ + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 0^I 0^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{1}^+_{\beta} \hat{0}^-_{\beta} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{A_{13},J_7} t_{B_1,I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 0^J 1^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{A_{13},J_7} t_{B_1,I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 0^J 1^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{1}^+_{\beta} \hat{0}^-_{\beta} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{A_{13},J_7} t_{B_1,I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 0^J 1^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{A_{13},J_7} t_{B_1,I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 0^J 1^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{A_{13},J_7} t_{B_1,I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 0^J 1^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{13},J_7} t_{I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 0^J 1^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{13},J_7} t_{I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 0^J 1^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{13},J_7} t_{I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 0^J 1^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{0}^+_{\beta} \hat{1}^-_{\alpha} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{13},J_7} t_{I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 0^J 1^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |I_0 \rangle \langle J_7| \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{13},J_7} t_{I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 0^J 1^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_2| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |I_0 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle t_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_3,J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 1^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{13},J_7} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 0^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{13},J_7} t_{B_1,I_3} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{7}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{7}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{7}}t_{B_{1},I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{7}}t_{B_{1},I_{3}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{1}^{+}_{\alpha}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{3}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I$$

$$\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_2,J_{10})\rangle = \\ + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_2} \\ + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_1,I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_2} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_2|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0 \rangle \langle I_10|\hat{1}^-_{\alpha}|I_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_3,J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},J_{10}} t_{B_1,I_3} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{1},I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{1},I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{1},I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{1},I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{1},I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}1^{J}\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}1^{J}|\hat{I}_{\alpha$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_2,J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},J_8}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_3, J_8)\rangle =$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{1},I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{3}|\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_9,J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^A0^J\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^A0^J\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^A|\hat{g}|0^I0^J\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^A|\hat{g}|0^I0^J\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^A0^J\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^A0^J\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_7,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^A 0^J \rangle \langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^A 0^J \rangle \langle A_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^A 0^J \rangle \langle A_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^A 0^J \rangle \langle A_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^A |\hat{g}|0^I 0^J \rangle \langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{14}} \end{split}$$

$$+ \tfrac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^A | \hat{g} | 0^I 0^J \rangle \langle A_0 | \hat{1}^+_\beta \hat{1}^-_\beta | A_1 \rangle \langle I_7 | \hat{0}^-_\beta | I_0 \rangle \langle J_{14} | \hat{0}^+_\beta | J_0 \rangle t_{B_1} t_{I_7,J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^A 0^J\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^A|\hat{g}|1^I 0^J\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^A|\hat{g}|1^I 0^J\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^A 0^J\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^A 0^J\rangle\langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^A 0^J\rangle\langle A_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^A|\hat{g}|1^I 0^J\rangle\langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^A|\hat{g}|1^I 0^J\rangle\langle A_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{14}} \\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_9,J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I0^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^I\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}|1^A0^J\rangle\langle I_1|\hat{0}_{\alpha}^{-}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{+}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{+}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{+}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{+}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{+}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{-}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{+}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{+}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{+}|I$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{9},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_9,J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3,B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3,B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3,B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^I\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3,B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3,B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_7,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_2|\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I0^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^I\rangle\langle A_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^I\rangle\langle A_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}0^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}0^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}0^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}0^{J}\langle A_{2}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{J}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}0^{J}\langle A_{2}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{1}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_7,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I0^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^I\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A0^J\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I0^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I0^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I0^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_14|\hat{0}^+_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^J0^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{12}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{12}}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^I 0^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{12}}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|0^J 1^I\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{12}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{A_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^A 0^J \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3,B_1} t_{I_{10},J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^A 0^J \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3,B_1} t_{I_{10},J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^A |\hat{g}| 1^I 0^J \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3,B_1} t_{I_{10},J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^A |\hat{g}| 0^J 1^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3,B_1} t_{I_{10},J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^A 0^J \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3,B_1} t_{I_{10},J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^A 0^J \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3} t_{B_1} t_{I_{10},J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^A 0^J \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3} t_{B_1} t_{I_{10},J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^A 0^J \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3} t_{B_1} t_{I_{10},J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^A |\hat{g}| 0^J 1^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3} t_{B_1} t_{I_{10},J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^A 0^J \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3} t_{B_1} t_{I_{10},J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^A 0^J \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^{-} |I_0\rangle \langle J_{12}| \hat{0}_{\alpha}^{+} |J_0\rangle t_{A_3} t_{B_1} t_{I_{10},J_{12}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 0^J\rangle\langle A_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2},B_{1}}t_{I_{8},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{8},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{8},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{8},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{J}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{2}}t_{B_{1}}t_{I_{8},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}|0^{J}\beta$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_3|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_3|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_3|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_3|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{I}0^{J}\rangle\langle A_3|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}1^{I}\rangle\langle A_3|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_3|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\alpha}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_3|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_3|\hat{0}^{+}_{\alpha}\hat{1}^{-}_{\alpha}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_3|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\alpha}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}0^{J}\rangle\langle A_3|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\alpha}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{J}1^{I}\rangle\langle A_3|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\alpha}|A_1\rangle\langle I_8|\hat{1}^{-}_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(B_{1},I_{9},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{I_{9},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{A}1^{J}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{I_{9},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^A1^J\rangle\langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^A1^J\rangle\langle A_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^A1^J\rangle\langle A_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^A1^J\rangle\langle A_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^A|\hat{g}|0^I1^J\rangle\langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^A|\hat{g}|0^I1^J\rangle\langle A_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^A 1^J\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^A|\hat{g}|1^I 1^J\rangle\langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^A|\hat{g}|1^I 1^J\rangle\langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^A 1^J\rangle\langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{B_1}t_{I_{10},J_{11}} \\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_1,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^A 1^J\rangle\langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^A 1^J\rangle\langle A_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^A|\hat{g}|1^I 1^J\rangle\langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{I_8,J_{13}} \end{split}$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A} 1^{A} | \hat{g} | 1^{I} 1^{J} \rangle \langle A_{0} | \hat{1}^{+}_{\beta} \hat{1}^{-}_{\beta} | A_{1} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle t_{B_{1}} t_{I_{8}, J_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|1^J0^I\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|1^J0^I\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{3},B_{1},I_{9},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3},B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3},B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3},B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{J}0^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3},B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3},B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{J}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{9},J_{11}} \\ &+ \frac{1$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{A} 0^{I} | \hat{g} | 1^{A} 1^{J} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle t_{A_{3}} t_{B_{1}} t_{I_{9},J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{A} 0^{I} | \hat{g} | 1^{A} 1^{J} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle t_{A_{3}} t_{B_{1}} t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|1^J0^I\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2,B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|0^I1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^A|\hat{g}|1^J0^I\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3}t_{B_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{J}\sum_{J}\langle 0^A0^I|\hat{g}|1^A1^J\rangle\langle A_3|\hat{0}^-_{\alpha}|1^A1^J\rangle\langle$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{A} 0^{I} | \hat{g} | 1^{A} 1^{J} \rangle \langle A_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{3}} t_{B_{1}} t_{I_{7},J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{A} 1^{A} | \hat{g} | 0^{I} 1^{J} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{3}} t_{B_{1}} t_{I_{7},J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{A} 1^{A} | \hat{g} | 1^{J} 0^{I} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{3}} t_{B_{1}} t_{I_{7},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^I 1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^J 1^I\rangle\langle A_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2,B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_2}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3,B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3,B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^I 1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3,B_1}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^J 1^I\rangle\langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3,B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3,B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_3}t_{B_1}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle\langle I_{10}|\hat{0}_{\alpha}^{-}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{-}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{+}|I_0\rangle\langle I_1|\hat{0}_{\alpha}^{-}|I_0\rangle\langle I_1|\hat{0}_{$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{J}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{10},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{J}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_1,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^I 1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^J 1^I\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^I 1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^I 1^J\rangle\langle A_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_2}t_{B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^I 1^J\rangle\langle A_2|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_1,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^I 1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^J 1^I\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^A|\hat{g}|1^J 1^I\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^A 1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_3,B_1}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^J 1^J\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{8},J_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{8},J_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{A}1^{J}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{8},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{J}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{8},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{A}|\hat{g}|1^{J}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{3}}t_{B_{1}}t_{I_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_1)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J | \hat{g} | 0^I 0^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | J_0 \rangle t_{A_{12},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J | \hat{g} | 0^I 0^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | J_0 \rangle t_{A_{12},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J | \hat{g} | 0^I 1^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | J_0 \rangle t_{A_{12},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J | \hat{g} | 0^I 1^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle t_{A_{12},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 0^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | J_0 \rangle t_{A_{12},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 0^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | J_0 \rangle t_{A_{12},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J | \hat{g} | 0^I 0^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | J_0 \rangle t_{B_1} t_{A_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J | \hat{g} | 0^I 0^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{0}_{\alpha}^+ \hat{0}_{\beta}^- | J_0 \rangle t_{B_1} t_{A_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^I 1^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | J_0 \rangle t_{B_1} t_{A_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^I 1^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | J_0 \rangle t_{B_1} t_{A_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^I 1^J \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | J_0 \rangle t_{B_1} t_{A_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} |$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{7},J_{1})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{1}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_2)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_{12},I_9} t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_{12},I_9} t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_{12},I_9} t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_{12},I_9} t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|1^J 0^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_{12},I_9} t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^J 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_{12},I_9} t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^J 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_3)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_{12},I_9}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_0\rangle t_{A_{12},I_9}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},I_9}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_{12},I_9}t_{B_1,J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_{12},I_9}t_{B_1,J_3} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{9}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{12}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}|A_{12}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|A_{12}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{12$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_7,J_2)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle t_{A_{14},I_7}t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0 \rangle t_{A_{14},I_7}t_{B_1,J_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|1^J 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle t_{A_{14},I_7}t_{B_1,J_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^J 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0 \rangle t_{A_{14},I_7}t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{14},I_7}t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{14},I_7}t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle t_{B_1}t_{A_{14},I_7}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle t_{B_1}t_{A_{14},I_7}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^J 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle t_{B_1}t_{A_{14},I_7}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^J 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle t_{B_1}t_{A_{14},I_7}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^J 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1}t_{A_{14},I_7}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1}t_{A_{14},I_7}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}|0^J 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{7},J_{3})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{3}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|A_{14},I_{17}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_1)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_{12},I_{10}} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_{12},I_{10}} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_{12},I_{10}} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_{12},I_{10}} t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 0^J 0^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_{12},I_{10}} t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^J 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_{12},I_{10}} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{B_1} t_{A_{12},I_{10}} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{B_1} t_{A_{12},I_{10}} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{1}_{\beta}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{B_1} t_{A_{12},I_{10}} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{B_1} t_{A_{12},I_{10}} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_1 |\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{B_1} t_{A_{12},I_{10}} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^J 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_1)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},I_8} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},I_8} t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},I_8} t_{B_1,J_1} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_2)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},I_{10}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_{12},I_{10}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_{12},I_{10}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_{12},I_{10}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^J 0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},I_{10}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},I_{10}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{B_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^J 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_3)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{12} |\hat{0}^+_{\alpha}|A_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3 |\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{12},I_{10}} t_{B_1,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{12} |\hat{0}^+_{\alpha}|A_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha}|I_0 \rangle \langle J_3 |\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle t_{A_{12},I_{10}} t_{B_1,J_3} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}|\hat{g}|0^{J}1^{J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_2)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},I_8}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},I_8}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^J 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},I_8}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^J 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{14},I_8}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{14},I_8}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{14},I_8}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_2} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 0^A 0^J|\hat{g}|1^J 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_2} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 0^A 0^J|\hat{g}|1^J 1^J\rangle\langle A_{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_3)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},I_8} t_{B_1,J_3} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_1)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{11},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0 \rangle t_{A_{11},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle t_{A_{11},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^J 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{11},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^I 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{11},I_9} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle t_{B_1} t_{A_{11},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^J 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^J 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0 \rangle t_{B_1} t_{A_{11},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^J 0^J \rangle \langle A_{$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_7, J_1)\rangle =$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{1},J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{1},J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_2)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^J 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^J 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}|0^J 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle I_2|\hat{1}^+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_3)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},I_9}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7,J_2)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_2} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 1^A0^J|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7,J_3)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{13},I_7}t_{B_1,J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_3$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{10},J_{1})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{11},I_{10}t_{J_{11}}\\ &+\frac{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_1)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_{13},I_8} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{1}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_{13},I_8} t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 0^J 0^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_{13},I_8} t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 1^J 1^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{1}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_{13},I_8} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{A_{13},I_8} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{A_{13},I_8} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{13},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{13},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 0^J 0^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{B_1} t_{A_{13},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 1^J 1^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\alpha} |J_0 \rangle t_{B_1} t_{A_{13},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^J |\hat{g}| 1^I 0^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{B_1} t_{A_{13},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^J |\hat{g}| 1^J 1^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{10},J_{2})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{2}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{B_{1},J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{2}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{10}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{10}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{10}\rangle\langle$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 1^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle A_{11} | \hat{1}_{\alpha}^{+} | A_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{B_{1}} t_{A_{11}, I_{10}} t_{J_{2}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{10},J_3)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_{11},I_{10}}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_{11},I_{10}}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_{11},I_{10}}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_{11},I_{10}}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J0^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_{11},I_{10}}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_{11},I_{10}}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_{11},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_{11},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_{11},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_{11},I_{10}}t_{J_3}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_2)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{13},I_8}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_8}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_8}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_8}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_{13},I_8}t_{J_2} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 1^A1^J|\hat{g}|0^J1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_3)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_{13},I_8} t_{B_1,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_{13},I_8} t_{B_1,J_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 1^J 0^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_{13},I_8} t_{B_1,J_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 0^J 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_{13},I_8} t_{B_1,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_{13},I_8} t_{B_1,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_{13},I_8} t_{B_1,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{B_1} t_{A_{13},I_8} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{B_1} t_{A_{13},I_8} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{B_1} t_{A_{13},I_8} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 0^J 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{B_1} t_{A_{13},I_8} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{B_1} t_{A_{13},I_8} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_3| \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{B_1} t_{A_{13},I_8} t_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{1},J_{12})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{1}} \end{split}$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{A} 1^{I} | \hat{g} | 0^{J} 1^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle t_{B_{1}} t_{A_{9},J_{12}} t_{I_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{A} 0^{I} | \hat{g} | 0^{J} 0^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{1} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle t_{B_{1}} t_{A_{9},J_{12}} t_{I_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{A} 1^{I} | \hat{g} | 0^{J} 1^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{1} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle t_{B_{1}} t_{A_{9},J_{12}} t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_1,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^I 0^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^I 0^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 0^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 0^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 0^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_14} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 0^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_14} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 0^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_14} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 0^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_14} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_14} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 0^J 1^I \rangle \langle A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_2,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 0^I 0^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^I 0^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_2 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^I 0^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{B_1} t_{A_9,J_{12}} t_{I_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^I 0^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{B_1} t_{A_9,J_{12}} t_{I_2} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_3,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 0^I 0^J \rangle \langle A_9 | \hat{0}_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^I 0^J \rangle \langle A_9 | \hat{0}_{\alpha} | A_1 \rangle \langle I_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{A_9,J_{12}} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 0^J \rangle \langle A_9 | \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{B_1} t_{A_9,J_{12}} t_{I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{B_1} t_{A_9,J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{B_1} t_{A_9,J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{B_1} t_{A_9,J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_9 | \hat{0}_{\alpha}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{B_1} t_{A_9,J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_2,J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_1,I_2} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_3,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 0^I 0^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^I 0^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{A_7,J_14} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 0^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_14} t_{I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_14} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_14} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_14} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_3 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_14} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_1,J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^I0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{10},J_{12}}t_{B_1,I_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^I0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{10},J_{12}}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^I\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{10},J_{12}}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^I\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{10},J_{12}}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^I\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{10},J_{12}}t_{B_1,I_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^I\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{10},J_{12}}t_{B_1,I_1} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_1,J_{14})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^I0^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_8,J_14}t_{B_1,I_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^I0^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_1|\hat{1}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_8,J_14}t_{B_1,I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^I\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_8,J_14}t_{B_1,I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^I\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_8,J_14}t_{B_1,I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_1|\hat{1}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_8,J_14}t_{B_1,I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_1|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_8,J_14}t_{B_1,I_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{B_1}t_{A_8,J_14}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^I\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{B_1}t_{A_8,J_14}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^I\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{B_1}t_{A_8,J_14}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^I\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{B_1}t_{A_8,J_14}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{0}_{\beta}^-|A_1\rangle\langle I_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{2},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{1},I_{2}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{1},I_{2}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{1},I_{2}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{1},I_{2}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{1},I_{2}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{1},I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_3,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I | \hat{g} | 0^I 0^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{12}} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^I 0^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{1}^+_{\alpha} \hat{0}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{12}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{12}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{1}^+_{\alpha} \hat{0}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{12}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{12}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\beta} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{12}} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 0^J 1^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{B_1} t_{A_{10},J_{12}} t_{I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 0^J 1^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{B_1} t_{A_{10},J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{B_1} t_{A_{10},J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{1}^+_{\alpha} \hat{0}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{B_1} t_{A_{10},J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 0^J 1^I \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{1}^-_{\alpha} \hat{0}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_2,J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_1,I_2} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{14}}t_{B_{1},I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{14}}t_{B_{1},I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle A_{1}|\hat{g}|0^{J}1^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_3,J_{14})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_1,I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_1,I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_14}t_{I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{1}^-_{\alpha}\hat{0}^-_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{1},J_{11})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{1},I_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{1},I_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{1},I_{1}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{1},I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{1},I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{1},I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_1,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^I 1^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_7,J_{13}} t_{B_1,I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^I 1^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_7,J_{13}} t_{B_1,I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 0^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_7,J_{13}} t_{B_1,I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 0^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_7,J_{13}} t_{B_1,I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 1^J 1^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_7,J_{13}} t_{B_1,I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^I 1^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_7,J_{13}} t_{B_1,I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 0^I 1^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_{13}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 0^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_{13}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 0^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_{13}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 0^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_{13}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 0^I \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{B_1} t_{A_7,J_{13}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_2,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,J_{11}} t_{B_1,I_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,J_{11}} t_{B_1,I_2} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{1},I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{1},I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{1},I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{1},I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}1^{J}\langle A_{9}|\hat{0}_{\alpha}^{-}|A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_3,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I | \hat{g} | 0^I 1^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_9,J_{11}} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^I 1^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_9,J_{11}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 1^I \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_9,J_{11}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 1^I \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_9,J_{11}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 1^I \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_9,J_{11}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 1^I \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_9,J_{11}} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{B_1} t_{A_9,J_{11}} t_{I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{B_1} t_{A_9,J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{B_1} t_{A_9,J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{B_1} t_{A_9,J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{B_1} t_{A_9,J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{11} |$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_2,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^I 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle t_{A_7,J_{13}} t_{B_1,I_2} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{13}}t_{B_{1},I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{13}}t_{B_{1},I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{13}}t_{B_{1},I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{13}}t_{B_{1},I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{B_{1},I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{J}1^{J}\langle A_{7}|\hat{0}_{\beta}^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_3,J_{13})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_1,I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_1,I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_1, J_{11})\rangle =$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{1},I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{1},I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{1},I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{1},I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{1},I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{B_{1},I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{I}\langle 1^{A}1^{I}|\hat{0}|\hat{0}|1^{I}|\hat{0}|1^{I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_1,J_{13})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_1} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_1} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_1|\hat{1}^-_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_2,J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|0^I 1^J\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_{10},J_{11}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^I 1^J\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_{10},J_{11}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_{10},J_{11}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_{10},J_{11}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_{10},J_{11}}t_{B_1,I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^I\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_{10},J_{11}}t_{B_1,I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{B_1}t_{A_{10},J_{11}}t_{B_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{B_1}t_{A_{10},J_{11}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{B_1}t_{A_{10},J_{11}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{B_1}t_{A_{10},J_{11}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{B_1}t_{A_{10},J_{11}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{B_1}t_{A_{10},J_{11}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle I_1|\hat{1}_{\alpha}^+|I_0\rangle\langle I_1|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_3,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I | \hat{g} | 0^I 1^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{11}} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^I 1^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{1}^+_{\alpha} \hat{0}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{11}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^J 1^I \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{11}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^J 1^I \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{1}^+_{\alpha} \hat{0}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{11}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^J 1^I \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{11}} t_{B_1,I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\beta} \hat{0}^-_{\beta} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_{A_{10},J_{11}} t_{B_1,I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_{B_1} t_{A_{10},J_{11}} t_{I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_{B_1} t_{A_{10},J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_{B_1} t_{A_{10},J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_{B_1} t_{A_{10},J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I | \hat{g} | 1^J 1^J \rangle \langle A_{10} | \hat{1}^-_{\alpha} | A_1 \rangle \langle I_3 | \hat{1}^-_{\alpha} \hat{0}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_2,J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{13}}t_{B_{1},I_{2}}}{+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{13}}t_{B_{1},I_{2}}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{13}}t_{B_{1},I_{2}}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{13}}t_{B_{1},I_{2}}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{13}}t_{B_{1},I_{2}}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{13}}t_{B_{1},I_{2}}}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{2}}}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{2}}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{2}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{2}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{2}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_3,J_{13})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_3} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_1,I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{12},J_1)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I0^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I0^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_1|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_1|\hat{1}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J1^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I0^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I0^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J0^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_1)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|0^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^J|\hat{g}|0^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{1}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|1^J 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{1}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|0^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^J|\hat{g}|0^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^J|\hat{g}|0^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^J 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^I 0^J\rangle\langle A_$$

$$+ \tfrac{-1}{4} \sum_I \sum_J \langle 0^A 1^J | \hat{g} | 0^I 1^J \rangle \langle A_7 | \hat{0}_\beta^- | A_1 \rangle \langle I_{14} | \hat{0}_\beta^+ | I_0 \rangle \langle J_1 | \hat{1}_\alpha^+ \hat{1}_\alpha^- | J_0 \rangle t_{B_1} t_{A_7, I_{14}} t_{J_1}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{12},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{B_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{12},J_3)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{1}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_1,J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{1}_\beta^+\hat{0}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_3|\hat{1}_\beta^+\hat{0}_\alpha^-|J_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_3} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\beta}}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{1}_{\bar{\beta}}^+\hat{0}_{\bar{\beta}}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\beta}}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^J0^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{1}_{\bar{\beta}}^+\hat{0}_{\bar{\beta}}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{0}_{\bar{\alpha}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\beta}}^-|J_0\rangle t_{A_7,I_{14}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\beta}}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\beta}}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\beta}}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^J1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{0}_{\bar{\beta}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{0}_{\bar{\alpha}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{\bar{\beta}}^+|I_0\rangle\langle J_2|\hat{0}_{\bar{\alpha}}^+\hat{1}_{\bar{\alpha}}^-|J_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|0^I1^J\rangle\langle A_7|\hat{0}_{\bar{\beta}}^-|A_1\rangle\langle I_{14}|\hat{0}_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{14},J_{3})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{7},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{7},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{7},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{7},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{7},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{3}}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_1)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^J\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_1)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_1} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},I_{12}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle I_2|\hat{0}^+_{\alpha}|I_0\rangle\langle I_1^-_{\alpha}|I_0\rangle\langle I_1^-_{\alpha}|I_0\rangle\langle I$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{12},J_{3})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\langle A_{10}|\hat{0}_{\alpha}^{-}|A_{10}|\hat{0}_{\alpha}^{-}|A_{10}|\hat{0}_{\alpha}^{-}|A_{10}|\hat{0}_{\alpha}^{-}|A_{10}|\hat{0}_{\alpha}^{-}|A_{10}|\hat{0}_{\alpha}^{-}|A_{10}|\hat{0}_{$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle A_{10} | \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle t_{B_{1}} t_{A_{10},I_{12}} t_{J_{3}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle A_{10} | \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{B_{1}} t_{A_{10},I_{12}} t_{J_{3}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle A_{10} | \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{B_{1}} t_{A_{10},I_{12}} t_{J_{3}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle A_{10} | \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{B_{1}} t_{A_{10},I_{12}} t_{J_{3}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle A_{10} | \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{B_{1}} t_{A_{10},I_{12}} t_{J_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^J0^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_8,I_{14}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^J1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_{14}|\hat{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{14},J_{3})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{1},J_{3}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{1},J_{3}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_1)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_9,I_{11}}t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_9,I_{11}}t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_9,I_{11}}t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{1}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_9,I_{11}}t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 0^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_9,I_{11}}t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^J 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_9,I_{11}}t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle I_{11}|\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_1)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_7,I_{13}} t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_7,I_{13}} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 0^J 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_7,I_{13}} t_{B_1,J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^J 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_7,I_{13}} t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_7,I_{13}} t_{B_1,J_1} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{7},I_{13}}t_{B_{1},J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{J}\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{J}|\hat{g}|1^{J}1^{J}\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_2)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0 \rangle t_{A_9,I_{11}} t_{B_1,J_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0 \rangle t_{A_9,I_{11}} t_{B_1,J_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0 \rangle t_{A_9,I_{11}} t_{B_1,J_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0 \rangle t_{A_9,I_{11}} t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 0^J 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0 \rangle t_{A_9,I_{11}} t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^J 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0 \rangle t_{A_9,I_{11}} t_{B_1,J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0 \rangle t_{B_1} t_{A_9,I_{11}} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0 \rangle t_{B_1} t_{A_9,I_{11}} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0 \rangle t_{B_1} t_{A_9,I_{11}} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|J_0 \rangle t_{B_1} t_{A_9,I_{11}} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 0^J 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0 \rangle t_{B_1} t_{A_9,I_{11}} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 0^J 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0 \rangle \langle J_2 |\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0 \rangle t_{B_1} t_{A_9,I_{11}} t_{J_2} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_3)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_9,I_{11}}t_{B_1,J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_9,I_{11}}t_{B_1,J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_3|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_9,I_{11}}t_{B_1,J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_3|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_9,I_{11}}t_{B_1,J_3} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle 1^{I}|\hat{0}_{\alpha}^{-$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_7,I_{13}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_7,I_{13}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^J1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_7,I_{13}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^J0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_7,I_{13}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_7,I_{13}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_7,I_{13}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_7,I_{13}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|0^J1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{B_1}t_{A_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^I|\hat{g}|1^J0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^J|\hat{g}|1^I1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{B_1}t_{A_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 0^A0^J|\hat{g}|1^J0^J\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_{13}|\hat{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_3)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_7,I_{13}} t_{B_1,J_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^J |\hat{g}| 1^I 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_7,I_{13}} t_{B_1,J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 0^J 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_7,I_{13}} t_{B_1,J_3} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{7},I_{13}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{7},I_{13}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{7},I_{13}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{J}\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{J}|\hat{g}|1^{J}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11},J_1)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{1}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{1}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A}1^{I}|\hat{g}|1^{J}1^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_1)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J |\hat{g}| 1^I 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle I_{13} |\hat{1}^+_{\beta}|I_0 \rangle \langle J_1 |\hat{0}^+_{\beta} \hat{0}^-_{\beta}|J_0 \rangle t_{A_8,I_{13}} t_{B_1,J_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^J |\hat{g}| 1^I 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle I_{13} |\hat{1}^+_{\beta}|I_0 \rangle \langle J_1 |\hat{1}^+_{\beta} \hat{1}^-_{\beta}|J_0 \rangle t_{A_8,I_{13}} t_{B_1,J_1} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{1},J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{1},J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{1},J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{1},J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{1}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},I_{11}}t_{B_1,J_2}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_{10},I_{11}}t_{B_1,J_2}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_{10},I_{11}}t_{B_1,J_2}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_{10},I_{11}}t_{B_1,J_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},I_{11}}t_{B_1,J_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},I_{11}}t_{B_1,J_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{11}}t_{J_2}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{11}}t_{J_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_{10},I_{11}}t_{J_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle I_1|\hat{1}^+_{\alpha}|I_0\rangle\langle I_1|\hat{1}^+_{\alpha}|I_0\rangle\langle I_1|\hat{1}^+_{\alpha}|I_0\rangle\langle I_1$$

$$\langle (A_1, B_1) | \hat{H} | (A_{10}, B_1, I_{11}, J_3) \rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^J | \hat{g} | 1^I 1^J \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_3 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | J_0 \rangle t_{A_{10}, I_{11}} t_{B_1, J_3}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{J}1^{J}\rangle\langle A_{10$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_1,J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_8,I_{13}}t_{B_1,J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^J1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^J0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^J|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 1^A0^J|\hat{g}|1^J1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_1, I_{13}, J_3)\rangle =$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{1},J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{1},J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_{12},J_9)\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^B0^J\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{I_{12},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^B0^J\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{I_{12},J_9} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^B|\hat{g}|0^I0^J\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{I_{12},J_9} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^B|\hat{g}|0^I0^J\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{I_{12},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^B0^J\rangle\langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{I_{12},J_9} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^B0^J\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_{14},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^B0^J\rangle\langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^B0^J\rangle\langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^B0^J\rangle\langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^B0^J\rangle\langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^B|\hat{g}|0^I0^J\rangle\langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{I_{14},J_7} \end{split}$$

$$+ \tfrac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^B | \hat{g} | 0^I 0^J \rangle \langle B_0 | \hat{1}^+_\beta \hat{1}^-_\beta | B_1 \rangle \langle I_{14} | \hat{0}^+_\beta | I_0 \rangle \langle J_7 | \hat{0}^-_\beta | J_0 \rangle t_{A_1} t_{I_{14}, J_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},I_{12},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},I_{14},J_{8})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{14},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{14},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{14},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{14},J_{8}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{14},J_{8}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_{12},J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^J0^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I0^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}|1^B0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}|1^B0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}|1^B0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}|1^B0^J\rangle\langle B$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_{12},J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^J0^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I0^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_{14},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^J0^I\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I0^J\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{14},J_7} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{A_{14},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{0}_{\beta}^{-}|\hat{0}_{\beta}^{-}|\hat{0}_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_{14},J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{14},J_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{14},J_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{14},J_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{14},J_7} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 0^J 0^I \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{14},J_7} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 0^I 0^J \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{14},J_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1} t_{B_3} t_{I_{14},J_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1} t_{B_3} t_{I_{14},J_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1} t_{B_3} t_{I_{14},J_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1} t_{B_3} t_{I_{14},J_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^{-} |J_0 \rangle t_{A_1} t_{B_3} t_{I_{14},J_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_{12},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|1^J0^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I1^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{10}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{10}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{12},J_{10}}\\ \end{aligned}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_{12},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{12},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 1^J 0^I \rangle \langle B_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{12},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 0^I 1^J \rangle \langle B_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1,B_3} t_{I_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1} t_{B_3} t_{I_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1} t_{B_3} t_{I_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 0^I 1^J \rangle \langle B_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1} t_{B_3} t_{I_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1} t_{B_3} t_{I_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_3 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^{-} |J_0 \rangle t_{A_1}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_{14},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1,B_2} t_{I_{14},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1,B_2} t_{I_{14},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1,B_2} t_{I_{14},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1,B_2} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{J}0^{I}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{J}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{0}_{\beta}^{-}|\hat{0}_{\beta}^{-}|\hat{0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_{14},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|1^J0^I\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_{11},J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|0^B 0^J \rangle \langle B_0|\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle t_{A_1} t_{I_{11},J_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^B 0^J \rangle \langle B_0|\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle t_{A_1} t_{I_{11},J_9} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^B |\hat{g}|1^I 0^J \rangle \langle B_0|\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+} |I_0\rangle \langle J_9|\hat{0}_{\alpha}^{-} |J_0\rangle t_{A_1} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 1^{B} | \hat{g} | 1^{I} 0^{J} \rangle \langle B_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{I_{11},J_{9}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{B} 1^{I} | \hat{g} | 0^{B} 0^{J} \rangle \langle B_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{I_{11},J_{9}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{B} 1^{I} | \hat{g} | 1^{B} 0^{J} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},I_{13},J_{7})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{13},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{13},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{13},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{13},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{13},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{I_{13},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_{11},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|0^B 1^J \rangle \langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^B 1^J \rangle \langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1} t_{I_{11},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^B |\hat{g}|1^I 1^J \rangle \langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1} t_{I_{11},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^B |\hat{g}|1^I 1^J \rangle \langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|0^B 1^J \rangle \langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^B 1^J \rangle \langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_{13},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|0^B 1^J \rangle \langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|0^B 1^J \rangle \langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^B 1^J \rangle \langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^B 1^J \rangle \langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^B |\hat{g}|1^I 1^J \rangle \langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1} t_{I_{13},J_8} \end{split}$$

$$+ \tfrac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^B | \hat{g} | 1^I 1^J \rangle \langle B_0 | \hat{1}^+_\beta \hat{1}^-_\beta | B_1 \rangle \langle I_{13} | \hat{1}^+_\beta | I_0 \rangle \langle J_8 | \hat{1}^-_\beta | J_0 \rangle t_{A_1} t_{I_{13},J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_{11},J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_{11},J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_3}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{11},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_{13},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_2}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_{13},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_3}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_3}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_3}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_3}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_3}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_3}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle I_1|\hat{0}^-_{\beta}|I_0\rangle t_{A_1}t_{A_1}t_{A_1}t_{A_2}t_{A_2}t_{A_2}t_{A_2}t_{A_2}t_{A_2}t_{A_2}t_{A_2}t_{A_$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{13},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{13},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{13},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_{11},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^J 1^I\rangle\langle B_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 1^J\rangle\langle B_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^J 1^J\rangle\langle B_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^J 1^J\rangle\langle B_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_2}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle I_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_{11},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 1^B 1^J \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_1,B_3} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 1^B 1^J \rangle \langle B_3 | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_1,B_3} t_{I_{11},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B | \hat{g} | 1^J 1^I \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_1,B_3} t_{I_{11},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B | \hat{g} | 1^I 1^J \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_1,B_3} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 1^B 1^J \rangle \langle B_3 | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_1,B_3} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 1^B 1^J \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_1,B_3} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 1^B 1^J \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_1,B_3} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 1^B 1^J \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_1} t_{B_3} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 1^B 1^J \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_1} t_{B_3} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 1^B 1^J \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_0 \rangle t_{A_1} t_{B_3} t_{I_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 1^B 1^J \rangle \langle B_3 | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{11},J_{10}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{11},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{11},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_{13},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1,B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1,B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1,B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1,B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 1^J 1^I \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1,B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 1^I 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1,B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1} t_{B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1} t_{B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1} t_{B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1} t_{B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^{-} |J_0 \rangle t_{A_1} t_{B_2} t_{I_{13},J_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 1^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_{13},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^J 1^I\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,B_3}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{1}_{\beta}^{-}|I$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{13},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{13},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{13},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{13},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{1},J_{7})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{14},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{14},J_{7}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_1,J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1,I_1}t_{B_{12},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|1^I 1^J \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1,I_1}t_{B_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1,I_1}t_{B_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1,I_1}t_{B_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|1^J 1^I \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1,I_1}t_{B_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|1^J 1^I \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1,I_1}t_{B_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1}t_{B_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1}t_{B_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1}t_{B_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1}t_{B_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1}t_{B_{12},J_{10}}t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_1}t_{B_{12},J_{10}}t_{I_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_1,J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J0^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J0^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_2,J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^I0^J\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^I0^J\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^I0^J\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{12},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_3,J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^I0^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,I_3}t_{B_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^I0^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_3|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,I_3}t_{B_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,I_3}t_{B_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,I_3}t_{B_{12},J_9} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{12},J_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{12},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{I}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_2,J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^I0^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_7}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^I0^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^I0^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_3,J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^I 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_1,I_3} t_{B_{14},J_7} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 0^I 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_1,I_3} t_{B_{14},J_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 0^J 1^I \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_1,I_3} t_{B_{14},J_7} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{14},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{14},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{14},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_2,J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^I 1^J \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1,I_2} t_{B_{12},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 0^I 1^J \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1,I_2} t_{B_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1,I_2} t_{B_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1,I_2} t_{B_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1,I_2} t_{B_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1,I_2} t_{B_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1} t_{B_{12},J_{10}} t_{I_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1} t_{B_{12},J_{10}} t_{I_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1} t_{B_{12},J_{10}} t_{I_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_1} t_{B_{12},J_{10}} t_{I_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^+ |$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_3,J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_3|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle t_{A_1,I_3} t_{B_{12},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_3|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle t_{A_1,I_3} t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{12},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{12},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{12},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{12},J_{10}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_2,J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_3,J_8)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^I 1^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_1,I_3} t_{B_{14},J_8} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{I}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{14},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{14},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{14},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{14},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},I_{3}}t_{B_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_1, J_7)\rangle =$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{13},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{1}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{13},J_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\beta}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{1}|\hat{0}^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_1,J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1,I_1} t_{B_{11},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^I 1^J \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1,I_1} t_{B_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1,I_1} t_{B_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1,I_1} t_{B_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^J 1^I \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1,I_1} t_{B_{11},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^J 1^I \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1,I_1} t_{B_{11},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1} t_{B_{11},J_{10}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1} t_{B_{11},J_{10}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1} t_{B_{11},J_{10}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1} t_{B_{11},J_{10}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^J 1^J \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle t_{A_1} t_{B_{11},J_{10}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^J 1^J \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_1|\hat{0}_{\beta}^+ \hat{0}_{\beta}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_1,J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{13},J_8}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{13},J_8}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J0^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{13},J_8}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{13},J_8}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J0^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{13},J_8}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{13},J_8}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_1}t_{B_{13},J_8}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_1}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J0^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_1}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_1}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_1}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_1}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_1}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_2,J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I0^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,I_2}t_{B_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I0^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,I_2}t_{B_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,I_2}t_{B_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,I_2}t_{B_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,I_2}t_{B_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,I_2}t_{B_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I0^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{0}_{\beta}^-|I_0\rangle\langle I_1|\hat{0}_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_3,J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I0^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I0^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I0^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{1}^+_{\alpha}|B_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{11}|\hat{1}^+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_2,J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_7}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_2}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{1}^+_{\alpha}\hat{1}^-$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_3,J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_7}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_3}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_3}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_3}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_3}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_3}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_3}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_3}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_2,J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1,I_2}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{11},J_{10}} t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{11},J_{10}} t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{11},J_{10}} t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{11},J_{10}} t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_{11},J_{10}} t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{2}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_3,J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,I_3}t_{B_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,I_3}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,I_3}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,I_3}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,I_3}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,I_3}t_{B_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_{10}}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_{10}}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_{10}}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_{10}}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_{10}}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{1}_{\alpha}^+|B_0^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},J_{10}}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_3|\hat{1}_{\alpha}^+|B_0^-|I_0\rangle\langle I_1|\hat{1}_{\alpha}^-|I_0\rangle\langle I_1|\hat{1}_{\alpha}^-|I_0\rangle\langle I_1|\hat{1}_{\alpha}^-|I_0\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_2,J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J1^I\rangle\langle B_1|\hat{J}^-_{\beta}|I_0\rangle\langle B_1|\hat$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},J_{8}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},J_{8}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_3,J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_3|\hat{1}^+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_9,J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^B0^J\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^B0^J\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^B|\hat{g}|0^I0^J\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^B|\hat{g}|0^I0^J\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^B0^J\rangle\langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^B0^J\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, I_7, J_{14})\rangle =$$

$$\begin{split} & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{B} 0^{I} | \hat{g} | 0^{B} 0^{J} \rangle \langle B_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{7},J_{14}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{B} 0^{I} | \hat{g} | 0^{B} 0^{J} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{7},J_{14}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 0^{I} | \hat{g} | 1^{B} 0^{J} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{7},J_{14}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 0^{I} | \hat{g} | 1^{B} 0^{J} \rangle \langle B_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{7},J_{14}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{B} 1^{B} | \hat{g} | 0^{I} 0^{J} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{7},J_{14}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{B} 1^{B} | \hat{g} | 0^{I} 0^{J} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{7},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^B0^J\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^B0^J\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^B|\hat{g}|1^I0^J\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^B|\hat{g}|1^I0^J\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^B0^J\rangle\langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^B0^J\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^B0^J\rangle\langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^B0^J\rangle\langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^B0^J\rangle\langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^B0^J\rangle\langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^B|\hat{g}|1^I0^J\rangle\langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^B|\hat{g}|1^I0^J\rangle\langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_9,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0\rangle \langle J_{12} |\hat{0}_{\alpha}^+ |J_0\rangle t_{A_1,B_2} t_{I_9,J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0\rangle \langle J_{12} |\hat{0}_{\alpha}^+ |J_0\rangle t_{A_1,B_2} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}|1^{B}0^{J}\rangle\langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_9,J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^J0^I\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^J0^I\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle I_12|\hat{0}_{\alpha}^{+}|J_0\rangle t_{$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_2, I_7, J_{14})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}| 1^B 0^J \rangle \langle B_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1\rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle t_{A_1, B_2} t_{I_7, J_{14}}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}0^{J}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_7,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^J0^I\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^J0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^J0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_7|\hat{0}_{\beta}^{-}|I_0\rangle\langle J_14|\hat{0}_{\beta}^{+}|J_0\rangle t_{A$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_2, I_{10}, J_{12})\rangle =$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{2}}t_{I_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{2}}t_{I_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_2}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_2}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_2}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_2}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_2}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_2|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_2}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|0^J 1^I\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1,B_3}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{1}_{\beta}^{-}|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_0\rangle t_{A_1}t_{B_3}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 0^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_8|\hat{0}_{\beta}^{-}|I_0\rangle\langle J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^B1^J\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^B1^J\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^B|\hat{g}|0^I1^J\rangle\langle B_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^B|\hat{g}|0^I1^J\rangle\langle B_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^B1^J\rangle\langle B_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^B1^J\rangle\langle B_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^B1^J\rangle\langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^B1^J\rangle\langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^B1^J\rangle\langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^B1^J\rangle\langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^B|\hat{g}|0^I1^J\rangle\langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^B|\hat{g}|0^I1^J\rangle\langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{I_{10},J_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, I_8, J_{13})\rangle =$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{B} 1^{I} | \hat{g} | 0^{B} 1^{J} \rangle \langle B_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{8},J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{B} 1^{I} | \hat{g} | 0^{B} 1^{J} \rangle \langle B_{0} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | B_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{8},J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 1^{I} | \hat{g} | 1^{B} 1^{J} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{8},J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 1^{I} | \hat{g} | 1^{B} 1^{J} \rangle \langle B_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | B_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{8},J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{B} 0^{B} | \hat{g} | 1^{I} 1^{J} \rangle \langle B_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{8},J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{B} 1^{B} | \hat{g} | 1^{I} 1^{J} \rangle \langle B_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | B_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{I_{8},J_{13}} \\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|1^J0^I\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|1^J0^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I1^J\rangle\langle B_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|1^J0^I\rangle\langle B_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_3}t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{9},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{9},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{9},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{9},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{9},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_2}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_2}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_2}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_2}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_2}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|1^J0^I\rangle\langle B_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_2}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{B_2}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{B_2}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{B_2}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{B_2}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{B_2}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{B_2}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1}t_{B_2}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^B|\hat{g}|0^I1^J\rangle\langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_3}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_3}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{1}^+_{\beta}\hat{0}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_3}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^B1^J\rangle\langle B_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_1,B_3}t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{7},J_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{7},J_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{7},J_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|0^{I}1^{J}0^{I}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{7},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{0}_{\beta}^{-}|\hat{0}_{\beta}^{-}|\hat{0}_{\beta}^{-}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^J 1^I\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1,B_2}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B 1^I|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^I 1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^J 1^J\rangle\langle B_2|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^J 1^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B|\hat{g}|1^B 1^J\rangle\langle B_2|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle t_{A_1}t_{B_2}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B 1^B$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{3},I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle \langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle \langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{B}1^{B}|\hat{g}|1^{I}1^{J}\rangle \langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{10},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}1^{J}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{10},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle I_{1$$

$$\langle (A_1,B_1)|\hat{H}|(A_1,B_2,I_8,J_{13})\rangle = \\ + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1,B_2} t_{I_8,J_{13}} \\ + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1,B_2} t_{I_8,J_{13}} \\ + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1,B_2} t_{I_8,J_{13}} \\ + \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1,B_2} t_{I_8,J_{13}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 1^I 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1,B_2} t_{I_8,J_{13}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 1^J 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1,B_2} t_{I_8,J_{13}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1} t_{B_2} t_{I_8,J_{13}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1} t_{B_2} t_{I_8,J_{13}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1} t_{B_2} t_{I_8,J_{13}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 1^J 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1} t_{B_2} t_{I_8,J_{13}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 1^J 1^J \rangle \langle B_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^{-} |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^{+} |J_0 \rangle t_{A_1} t_{B_2} t_{I_8,J_{13}} \\ + \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^B |\hat{g}| 1^J 1^J \rangle \langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_3,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_3 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle t_{A_1,B_3} t_{I_8,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^B 1^J \rangle \langle B_3 |\hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle t_{A_1,B_3} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{8},J_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{8},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{8},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},B_{3}}t_{I_{8},J_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{8},J_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{8},J_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{8},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{8},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{8},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{8},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{3}}t_{I_{8},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{B}|\hat{g}|1^{J}1^{J}\rangle\langle B_{3}|\hat{0}_{\beta}^{-}|\hat{0}_{\beta}^{-$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_1)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_1,J_1} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_1,J_1} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1,J_1} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_1,J_1} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^J 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_1,J_1} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_1,J_1} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{1}_{\beta}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{1}_{\beta}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{1}_{\beta}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_1|\hat{1}_{\beta}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7,J_1)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_1} t_{B_{14},I_7} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{14},I_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{14},I_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{14},I_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{14},I_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_2)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|1^J 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^J 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}|0^J$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_9, J_3)\rangle =$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{12},I_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{12},I_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{12},I_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{12},I_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{12},I_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{12},I_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7,J_2)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J0^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_7}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_7}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J0^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_7}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_7}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{14},I_7}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{14},I_7}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{14},I_7}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7,J_3)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1,J_3} t_{B_{14},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{1}^+_{\beta} \hat{0}^-_{\beta} | J_0 \rangle t_{A_1,J_3} t_{B_{14},I_7} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 0^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1,J_3} t_{B_{14},I_7} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{1}^+_{\beta} \hat{0}^-_{\beta} | J_0 \rangle t_{A_1,J_3} t_{B_{14},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | J_0 \rangle t_{A_1,J_3} t_{B_{14},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | J_0 \rangle t_{A_1,J_3} t_{B_{14},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | J_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | J_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J | \hat{g}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{10},J_{1})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{12},I_{10}}}{+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{12},I_{10}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{12},I_{10}}}{+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{12},I_{10}}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|0^{J}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{12},I_{10}}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{12},I_{10}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|1^{J}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{1}}\\ &+\frac{1}{4}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_1)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 0^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1,J_1} t_{B_{14},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^J |\hat{g}| 1^I 1^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{1}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1,J_1} t_{B_{14},I_8} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 0^J 0^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1,J_1} t_{B_{14},I_8} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^J 1^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{1}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1,J_1} t_{B_{14},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 0^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{A_1,J_1} t_{B_{14},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^J |\hat{g}| 1^I 1^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{A_1,J_1} t_{B_{14},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 0^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{14},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^J |\hat{g}| 1^I 1^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{14},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^J |\hat{g}| 1^J 1^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{14},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^J |\hat{g}| 1^J 1^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{14},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^J |\hat{g}| 1^J 1^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{A_1} t_{B_{14},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^J |\hat{g}| 1^J 1^J \rangle \langle B_{14}| \hat{0}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{10},J_2)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 1^J 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}| 0^J 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{12},I_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{12},I_{10}} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_1} t_{B_{12},I_{10}} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_1} t_{B_{12},I_{10}} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_1} t_{B_{12},I_{10}} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_1} t_{B_{12},I_{10}} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_2|\hat{1}_{\alpha}^+ \hat{0}_{\beta}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{10},J_3)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,J_3}t_{B_{12},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,J_3}t_{B_{12},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,J_3}t_{B_{12},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_1,J_3}t_{B_{12},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,J_3}t_{B_{12},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,J_3}t_{B_{12},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{12},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{12},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{12},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{12},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{12},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{10}|\hat{0}_{\alpha}^-|I_0\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{12},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{0}_{\alpha}^-|I_0\rangle\langle I_1|\hat{0}_{\alpha}^-|I_0\rangle\langle I_1|\hat{0}_{\alpha}^+|I_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_2)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J0^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_{14},I_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{0$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{2}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_3)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_{14},I_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_{14},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J0^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_{14},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_{14},I_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_{14},I_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_{14},I_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{14},I_8} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_1)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_1}t_{B_{11},I_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_1}t_{B_{11},I_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_1}t_{B_{11},I_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_1}t_{B_{11},I_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J0^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_1}t_{B_{11},I_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_1}t_{B_{11},I_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_1} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 1^B1^J|\hat{g}|0^J1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 0^{I} | \hat{g} | 0^{J} 0^{J} \rangle \langle B_{11} | \hat{1}_{\alpha}^{+} | B_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{11}, I_{9}} t_{J_{1}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 0^{I} | \hat{g} | 1^{J} 1^{J} \rangle \langle B_{11} | \hat{1}_{\alpha}^{+} | B_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{1} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{11}, I_{9}} t_{J_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_1)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_1}t_{B_{13},I_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|0^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_1}t_{B_{13},I_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_1}t_{B_{13},I_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_1}t_{B_{13},I_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_1}t_{B_{13},I_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|0^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_1}t_{B_{13},I_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_2)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,J_2}t_{B_{11},I_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,J_2}t_{B_{11},I_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_2|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,J_2}t_{B_{11},I_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_1,J_2}t_{B_{11},I_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J0^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,J_2}t_{B_{11},I_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,J_2}t_{B_{11},I_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_2} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 1^B0^J|\hat{g}|0^J1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle I_2|\hat{0}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_2} \\ &+ \frac{1}{4}\sum_{J}\sum_{J}\langle 1^B0^J|\hat{g}|0^J1^J\rangle\langle B_{11}|\hat{0}_{\beta}^-|I_0\rangle\langle I_0|\hat{0}_{\alpha$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_3)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1,J_3} t_{B_{11},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1,J_3} t_{B_{11},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{A_1,J_3} t_{B_{11},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{1}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1,J_3} t_{B_{11},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}| 1^J 0^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1,J_3} t_{B_{11},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}| 0^J 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1,J_3} t_{B_{11},I_9} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1} t_{B_{11},I_9} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{11},I_9} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{A_1} t_{B_{11},I_9} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1} t_{B_{11},I_9} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1} t_{B_{11},I_9} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}| 0^I 1^J \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1 \rangle \langle I_9| \hat{0}^-_{\alpha} |I_0 \rangle \langle J_3| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_2)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle \langle J_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1,J_2} t_{B_{13},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle \langle J_2| \hat{1}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1,J_2} t_{B_{13},I_7} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}| 1^J 0^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle \langle J_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1,J_2} t_{B_{13},I_7} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}| 0^J 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle \langle J_2| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1,J_2} t_{B_{13},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle \langle J_2| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1,J_2} t_{B_{13},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle \langle J_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1,J_2} t_{B_{13},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle \langle J_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 0^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle \langle J_2| \hat{1}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_2} \end{split}$$

$$\begin{split} & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 0^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle B_{13} | \hat{1}_{\beta}^{+} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{13}, I_{7}} t_{J_{2}} \\ & + \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 0^{I} | \hat{g} | 0^{J} 1^{J} \rangle \langle B_{13} | \hat{1}_{\beta}^{+} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{13}, I_{7}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{B} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle B_{13} | \hat{1}_{\beta}^{+} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{13}, I_{7}} t_{J_{2}} \\ & + \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{B} 0^{J} | \hat{g} | 0^{I} 1^{J} \rangle \langle B_{13} | \hat{1}_{\beta}^{+} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{13}, I_{7}} t_{J_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_3)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1,J_3} t_{B_{13},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{1}^+_{\beta} \hat{0}^-_{\beta} | J_0 \rangle t_{A_1,J_3} t_{B_{13},I_7} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 0^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1,J_3} t_{B_{13},I_7} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 1^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{1}^+_{\beta} \hat{0}^-_{\beta} | J_0 \rangle t_{A_1,J_3} t_{B_{13},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | J_0 \rangle t_{A_1,J_3} t_{B_{13},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | J_0 \rangle t_{A_1,J_3} t_{B_{13},I_7} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 1^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | J_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | J_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J | \hat{g}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{10},J_{1})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{11},I_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{11},I_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{11},I_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{11},I_{10}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{11},I_{10}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{11},I_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{11},I_{10}} \\ &+\frac{1}{4}\sum_{J}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle I_{10}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle I_{10$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{1}}\\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8,J_1)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 0^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1,J_1} t_{B_{13},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{1}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1,J_1} t_{B_{13},I_8} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}| 0^J 0^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1,J_1} t_{B_{13},I_8} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}| 1^J 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{1}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1,J_1} t_{B_{13},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 0^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{A_1,J_1} t_{B_{13},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{A_1,J_1} t_{B_{13},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 0^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}| 0^J 0^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 0^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 0^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |J_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 0^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_1| \hat{0}^+_{\alpha} \hat{0}^-_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{10},J_{2})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{11},I_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{11},I_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{11},I_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{11},I_{10}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{11},I_{10}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{10},J_3)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_{11},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_{11},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_{11},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_{11},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J0^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_{11},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_{11},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},I_{10}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle I_3|\hat{0}^-_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{11},I_{10}}t_{J_3}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8,J_2)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{13},I_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{13},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{13},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{13},I_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_{13},I_8} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{2}}t_{B_{13},I_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8,J_3)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1,J_3} t_{B_{13},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{1}^+_{\beta} \hat{0}^-_{\beta} |J_0 \rangle t_{A_1,J_3} t_{B_{13},I_8} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}| 1^J 0^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1,J_3} t_{B_{13},I_8} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}| 0^J 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\beta} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1,J_3} t_{B_{13},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1,J_3} t_{B_{13},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\beta} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1,J_3} t_{B_{13},I_8} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}| 0^J 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |J_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}| 0^J 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\beta} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |J_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1 \rangle \langle I_8| \hat{1}^-_{\beta} |I_0 \rangle \langle J_3| \hat{0}^+_{\alpha} \hat{1}^-_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_1,J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^I0^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_1,I_1}t_{B_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^I0^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_1|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_1,I_1}t_{B_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J0^I\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_1|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_1,I_1}t_{B_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^I\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_1|\hat{1}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_1,I_1}t_{B_9,J_{12}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{1}|\hat{0}_{\alpha}^{-}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_1,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^I 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_1} t_{B_7,J_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 1^I 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{1}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_1} t_{B_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 0^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_1} t_{B_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 0^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_1} t_{B_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{1}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_1} t_{B_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{1}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_1} t_{B_7,J_{14}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 0^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{0}_\beta^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 0^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{0}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{1}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_1 | \hat{1}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_2,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|0^I 0^J \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_2|\hat{0}_\alpha^+ \hat{1}_\alpha^- |I_0\rangle \langle J_{12}|\hat{0}_\alpha^+ |J_0\rangle t_{A_1,I_2} t_{B_9,J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^I 0^J \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_2|\hat{1}_\alpha^+ \hat{0}_\alpha^- |I_0\rangle \langle J_{12}|\hat{0}_\alpha^+ |J_0\rangle t_{A_1,I_2} t_{B_9,J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^J 1^I \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_2|\hat{0}_\alpha^+ \hat{1}_\alpha^- |I_0\rangle \langle J_{12}|\hat{0}_\alpha^+ |J_0\rangle t_{A_1,I_2} t_{B_9,J_{12}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{I}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{2}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_3,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 0^I 0^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^I 0^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 0^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{12}} t_{I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle I_3 | \hat{0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_2,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|0^I 0^J \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle t_{A_1,I_2} t_{B_7,J_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^I 0^J \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_2 |\hat{1}^+_{\beta} \hat{0}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle t_{A_1,I_2} t_{B_7,J_{14}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{7},J_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{7},J_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_3,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 0^I 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_3} t_{B_7,J_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^I 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_3} t_{B_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_3} t_{B_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_3} t_{B_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_3} t_{B_7,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1,I_3} t_{B_7,J_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^I 0^J \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_7 | \hat{0}_\beta^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{14} |$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_1,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^I 0^J \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_1,I_1} t_{B_{10},J_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{I}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{I}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{I}\rangle\langle B_{10}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_1,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^I 0^J \rangle \langle B_8| \hat{1}_{\beta} |B_1 \rangle \langle I_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_8,J_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|1^I 0^J \rangle \langle B_8| \hat{1}_{\beta} |B_1 \rangle \langle I_1| \hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_8,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^J 0^I \rangle \langle B_8| \hat{1}_{\beta}^- |B_1 \rangle \langle I_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_8,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^J 0^I \rangle \langle B_8| \hat{1}_{\beta}^- |B_1 \rangle \langle I_1| \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_8,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|0^J 1^I \rangle \langle B_8| \hat{1}_{\beta}^- |B_1 \rangle \langle I_1| \hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_8,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|0^J 1^I \rangle \langle B_8| \hat{1}_{\beta}^- |B_1 \rangle \langle I_1| \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_8,J_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^J 0^J \rangle \langle B_8| \hat{1}_{\beta}^- |B_1 \rangle \langle I_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_8,J_{14}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^J 0^I \rangle \langle B_8| \hat{1}_{\beta}^- |B_1 \rangle \langle I_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_8,J_{14}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^J 0^I \rangle \langle B_8| \hat{1}_{\beta}^- |B_1 \rangle \langle I_1| \hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_8,J_{14}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^J 0^I \rangle \langle B_8| \hat{1}_{\beta}^- |B_1 \rangle \langle I_1| \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_8,J_{14}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|0^J 1^I \rangle \langle B_8| \hat{1}_{\beta}^- |B_1 \rangle \langle I_1| \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_8,J_{14}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}|0^J 1^I \rangle \langle B_8| \hat{1}_{\beta}^- |B_1 \rangle \langle I_1| \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle I_1| \hat{0}_{\beta}^+ |I_0 \rangle \langle$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_2, J_{12})\rangle =$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{I}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{I}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{10},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1},I_{2}}t_{B_{10},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{2}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{I}\rangle\langle B_{10}|\hat{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_3,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I | \hat{g} | 0^I 0^J \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_1,I_3} t_{B_{10},J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^I 0^J \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{1}^+_{\alpha} \hat{0}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_1,I_3} t_{B_{10},J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_1,I_3} t_{B_{10},J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_1,I_3} t_{B_{10},J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_1,I_3} t_{B_{10},J_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_1,I_3} t_{B_{10},J_{12}} t_{I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 0^J \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_1} t_{B_{10},J_{12}} t_{I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_1} t_{B_{10},J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_1} t_{B_{10},J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_1} t_{B_{10},J_{12}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^J 1^I \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} |$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_2,J_{14})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^IO^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_8,J_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^IO^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_8,J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_8,J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_8,J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_8,J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_2}t_{B_8,J_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}} t_{I_2} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}} t_{I_2} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}} t_{I_2} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}} t_{I_2} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}} t_{I_2} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}} t_{I_2} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{0}^-_{\beta}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{0}^-_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_3,J_{14})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_8,J_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_8,J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_8,J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_8,J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_8,J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1,I_3}t_{B_8,J_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_3} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^I\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_1,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1,I_1} t_{B_9,J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|1^I 1^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1,I_1} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1,I_1} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|1^J 1^I \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1,I_1} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1,I_1} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\beta}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1,I_1} t_{B_9,J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_1,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_7,J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|1^I 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_7,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_7,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_7,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|1^J 1^I \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_7,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|1^J 1^I \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_1} t_{B_7,J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|0^I 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 0^I \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|1^J 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|1^J 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_2,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 0^I 1^J \rangle \langle B_9 | \hat{0}_\alpha | B_1 \rangle \langle I_2 | \hat{0}_\alpha^+ \hat{1}_\alpha | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_2} t_{B_9,J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^I 1^J \rangle \langle B_9 | \hat{0}_\alpha | B_1 \rangle \langle I_2 | \hat{1}_\alpha^+ \hat{0}_\alpha | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_2} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha | B_1 \rangle \langle I_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_2} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha | B_1 \rangle \langle I_2 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_2} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_2 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_2} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_2 | \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_2} t_{B_9,J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_2 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_2 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_2 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_2 | \hat{0}_\beta^+ \hat{0}_\beta^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_3,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I | \hat{g} | 0^I 1^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^I 1^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\beta^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1,I_3} t_{B_9,J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\alpha^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle \langle J_{11} | \hat{1}_\alpha^+ | J_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_3 | \hat{0}_\beta^+ \hat{1}_\alpha^- | I_0 \rangle \langle I_1 | \hat{$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{B} 0^{I} | \hat{g} | 1^{J} 1^{I} \rangle \langle B_{9} | \hat{0}_{\alpha}^{-} | B_{1} \rangle \langle I_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle t_{A_{1}} t_{B_{9},J_{11}} t_{I_{3}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_2,J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_2}t_{B_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_2}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_2}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_2}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_2}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_2}t_{B_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\beta}^+|B_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^I\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\beta}^-|B_1\rangle\langle I_2|\hat{0}_{\alpha}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_3,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 1^I |\hat{g}|0^I 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_3} t_{B_7,J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^I 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_3} t_{B_7,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^I \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_3} t_{B_7,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^I \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_3} t_{B_7,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^I \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{1}_{\beta}^+ \hat{0}_{\alpha}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1,I_3} t_{B_7,J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^I \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_3} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_3} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^B 0^I |\hat{g}|1^J 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{B} 0^{I} | \hat{g} | 1^{J} 1^{I} \rangle \langle B_{7} | \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{B_{7},J_{13}} t_{I_{3}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{B} 0^{I} | \hat{g} | 1^{J} 1^{I} \rangle \langle B_{7} | \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle t_{A_{1}} t_{B_{7},J_{13}} t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_1,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^I 1^J \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_{A_1,I_1} t_{B_{10},J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I | \hat{g} | 1^I 1^J \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_{A_1,I_1} t_{B_{10},J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 0^I \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_{A_1,I_1} t_{B_{10},J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I | \hat{g} | 1^J 1^I \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_{A_1,I_1} t_{B_{10},J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 0^I \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_{A_1,I_1} t_{B_{10},J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I | \hat{g} | 1^J 1^J \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_{A_1,I_1} t_{B_{10},J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 0^I 1^J \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_{A_1} t_{B_{10},J_{11}} t_{I_1} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 0^J \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_{A_1} t_{B_{10},J_{11}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 0^I \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_{A_1} t_{B_{10},J_{11}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 0^I \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{0}_{\alpha}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_{A_1} t_{B_{10},J_{11}} t_{I_1} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 0^I \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_1 | \hat{0}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle t_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{1},J_{13})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{8},J_{13}}}{+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{8},J_{13}}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{8},J_{13}}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{8},J_{13}}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1},I_{1}}t_{B_{8},J_{13}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{1}}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle\mathbf{1}^{B}\mathbf{0}^{I}|\hat{g}|\mathbf{1}^{J}\mathbf{0}^{I}\rangle\langle B_{8}|\hat{\mathbf{1}}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{\mathbf{0}}_{\alpha}^{+}\hat{\mathbf{0}}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{\mathbf{1}}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle\mathbf{1}^{B}\mathbf{1}^{I}|\hat{g}|\mathbf{1}^{J}\mathbf{1}^{I}\rangle\langle B_{8}|\hat{\mathbf{1}}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{\mathbf{1}}_{\beta}^{+}\hat{\mathbf{1}}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{\mathbf{1}}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle\mathbf{1}^{B}\mathbf{1}^{I}|\hat{g}|\mathbf{1}^{J}\mathbf{1}^{I}\rangle\langle B_{8}|\hat{\mathbf{1}}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{\mathbf{1}}_{\alpha}^{+}\hat{\mathbf{1}}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{\mathbf{1}}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_2,J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_2}t_{B_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_2}t_{B_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_2}t_{B_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_2}t_{B_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_2}t_{B_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_2}t_{B_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},J_{11}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},J_{11}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},J_{11}}t_{I_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_2|\hat{1}^-_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle I_1|\hat{1}^-_{\alpha}|I_0\rangle\langle I_1|\hat{1}^-_{\alpha}|I_0\rangle\langle I_1|I_0\rangle\langle I_1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_3,J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1,I_3}t_{B_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},J_{11}}t_{I_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},J_{11}}t_{I_3} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_2,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I | \hat{g} | 0^I 1^J \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1,I_2} t_{B_8,J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^I 1^J \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1,I_2} t_{B_8,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1,I_2} t_{B_8,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1,I_2} t_{B_8,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1,I_2} t_{B_8,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1,I_2} t_{B_8,J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_2} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 1^J \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I | \hat{g} | 1^J 1^I \rangle \langle B_8 | \hat{1}_{\beta}^- | B_1 \rangle \langle I_2 | \hat{0}_{\beta}^+ \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_3,J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_3}t_{B_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_3|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_3}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_3}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_3}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_3|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_3}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^I\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_3|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_3}t_{B_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_3}t_{B_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_1,I_3}t_{B_8,J_{13}} \\ \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{I}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_1)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{1}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J0^J\rangle\langle B_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_1)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I0^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_1,J_1}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_1|\hat{1}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{A_1,J_1}t_{B_7,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J0^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_1,J_1}t_{B_7,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J1^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_1|\hat{1}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{A_1,J_1}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I0^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{J}\langle 0^{B}1^{J}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle I_{14}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_2}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{A_1,J_2}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1,J_2}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_1,J_2}t_{B_9,I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_2}t_{B_9,I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_2}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle I_2|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_3)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_3|\hat{1}_{\alpha}^+\hat{0}_{\alpha}^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_3|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{9},I_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{9},I_{12}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{9},I_{12}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{9},I_{12}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{9},I_{12}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{9},I_{12}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{9},I_{12}}t_{J_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_{\beta}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,J_2}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_1,J_2}t_{B_7,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,J_2}t_{B_7,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|1^J0^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_1,J_2}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,J_2}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,J_2}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^J1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^I|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_2|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|0^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{7},I_{14},J_{3})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{7},I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{7},I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{7},I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{7},I_{14}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{7},I_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{7},I_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{J}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|0^{J}1^{J}|\hat{0}_{\beta}^{-}|0^{J}|\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_1)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_1}t_{B_{10},I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_1}t_{B_{10},I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_1}t_{B_{10},I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_1}t_{B_{10},I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_1}t_{B_{10},I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_1}t_{B_{10},I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}} t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\beta}|J_0\rangle t_{A_1}t_{B_{10},I_{12}} t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}} t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}} t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}} t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}} t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_1)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}|0^I 0^J \rangle \langle B_8 |\hat{1}^-_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0 \rangle t_{A_1,J_1} t_{B_8,I_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 1^J |\hat{g}|0^I 1^J \rangle \langle B_8 |\hat{1}^-_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|J_0 \rangle t_{A_1,J_1} t_{B_8,I_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 0^I |\hat{g}|0^J 0^J \rangle \langle B_8 |\hat{1}^-_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|J_0 \rangle t_{A_1,J_1} t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{8},I_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{8},I_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{8},I_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle I_{11}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle I_{11}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{11}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{11}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{11}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{11}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_{10},I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{10},I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_{10},I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_{10},I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_{10},I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_{10},I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{12}}t$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_3)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3} t_{B_{10},I_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}|0^I 1^J \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_3} t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{10},I_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{10},I_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{10},I_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{10},I_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{3}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{10}|\hat$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|1^J0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^I|\hat{g}|0^J1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|0^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{1$$

$$\langle (A_1, B_1) | \hat{H} | (A_1, B_8, I_{14}, J_3) \rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J | \hat{g} | 0^I 1^J \rangle \langle B_8 | \hat{1}^-_{\beta} | B_1 \rangle \langle I_{14} | \hat{0}^+_{\beta} | I_0 \rangle \langle J_3 | \hat{0}^+_{\beta} \hat{1}^-_{\beta} | J_0 \rangle t_{A_1, J_3} t_{B_8, I_{14}}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{8},I_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{8},I_{14}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{8},I_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{8},I_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{3}}t_{B_{8},I_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{I}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{3}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_1)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\beta^+\hat{0}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{1}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{1}_\beta^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1,J_1}t_{B_9,I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_1|\hat{0}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J0$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_7, I_{13}, J_1)\rangle =$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{7},I_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{7},I_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{7},I_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{7},I_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{7},I_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{1}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{1}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{B}0^{J}|\hat{g}|1^{J}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_9,I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_9,I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J0^J\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_3)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\beta^+\hat{1}_\beta^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_3|\hat{1}_\alpha^+\hat{0}_\alpha^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_3|\hat{1}_\beta^+\hat{0}_\beta^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1,J_3}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_3|\hat{0}_\alpha^+\hat{1}_\alpha^-|J_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B1^I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_7,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_7,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J0^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J0^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_3)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,J_3}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{1}_{\beta}^+\hat{0}_{\beta}^-|J_0\rangle t_{A_1,J_3}t_{B_7,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,J_3}t_{B_7,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J0^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,J_3}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1,J_3}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1,J_3}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|0^J1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J0^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\beta}^+\hat{1}_{\beta}^-|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B1^I|\hat{g}|1^J0^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_3|\hat{0}_{\alpha}^+\hat{1}_{\alpha}^-|J_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^B0^J|\hat{g}|1^I1^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{11},J_{1})\rangle = \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{10},I_{11}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{10},I_{11}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{10},I_{11}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{10},I_{11}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{10},I_{11}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1},J_{1}}t_{B_{10},I_{11}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{1}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{1}}t$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_1)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I0^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,J_1}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|J_0\rangle t_{A_1,J_1}t_{B_8,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J0^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,J_1}t_{B_8,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,J_1}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I0^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1,J_1}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1,J_1}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_1} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J0^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_1} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_0\rangle\langle J_1|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|J_0\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{11},J_2)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{10},I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_1,J_2} t_{B_{10},I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{10},I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |J_0\rangle t_{A_1,J_2} t_{B_{10},I_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}| 0^J 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{10},I_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^B 1^I |\hat{g}| 1^J 0^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1,J_2} t_{B_{10},I_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{10},I_{11}} t_{J_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |J_0\rangle t_{A_1} t_{B_{10},I_{11}} t_{J_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{0}_{\beta}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{10},I_{11}} t_{J_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{10},I_{11}} t_{J_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |J_0\rangle t_{A_1} t_{B_{10},I_{11}} t_{J_2} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^B 0^J |\hat{g}| 1^I 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle I_1|\hat{1}_{\alpha}^$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{B} 1^{I} | \hat{g} | 1^{J} 0^{J} \rangle \langle B_{10} | \hat{1}_{\alpha}^{-} | B_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{10}, I_{11}} t_{J_{2}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{11},J_3)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_{10},I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_{10},I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_{10},I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_{10},I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_{10},I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_{10},I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{11}} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{11}} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{11}} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{11}} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{11}} t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_{10},I_{11}} t_{J_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_2)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_2}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_2} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_2} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle I_1^-_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle I_1^-_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle I_1^-_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle I_1^-_{\beta}\hat{1}^-_{\beta}|I_0\rangle\langle$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle B_{8} | \hat{1}_{\beta}^{-} | B_{1} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{2} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{8},I_{13}} t_{J_{2}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{B} 0^{J} | \hat{g} | 1^{I} 1^{J} \rangle \langle B_{8} | \hat{1}_{\beta}^{-} | B_{1} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | J_{0} \rangle t_{A_{1}} t_{B_{8},I_{13}} t_{J_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_3)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_8,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1,J_3}t_{B_8,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1,J_3}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_3} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|0^J1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B1^I|\hat{g}|1^J0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|J_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_3} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^B0^J|\hat{g}|1^I1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_{12},I_9)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{12},I_9} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^B 0^I \rangle \langle A_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{12},I_9} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|0^B 0^I \rangle \langle A_0|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{12},I_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(B_{14}, I_7)\rangle =$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{A}0^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{14},I_{7}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{A}0^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{14},I_{7}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{14},I_{7}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{14},I_{7}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|0^{B}0^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{14},I_{7}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|0^{B}0^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{14},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_{12},I_{10})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 1^I \rangle \langle A_0 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1 \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0 \rangle t_{B_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_0 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1 \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0 \rangle t_{B_{12},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^B 1^I \rangle \langle A_0 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1 \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0 \rangle t_{B_{12},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|0^B 1^I \rangle \langle A_0 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1 \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0 \rangle t_{B_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 1^I \rangle \langle A_0 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1 \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0 \rangle t_{B_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_0 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1 \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1 \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0 \rangle t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_{14},I_8)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 1^I \rangle \langle A_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle t_{B_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 1^I \rangle \langle A_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle t_{B_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle t_{B_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_0|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle t_{B_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^B 1^I \rangle \langle A_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle t_{B_{14},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|0^B 1^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle t_{B_{14},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|0^B 1^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_{12},I_9)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle B_{12} |\hat{0}_{\alpha}^{+} |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^{-} |I_0\rangle t_{A_2} t_{B_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle B_{12} |\hat{0}_{\alpha}^{+} |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^{-} |I_0\rangle t_{A_2} t_{B_{12},I_9} \end{split}$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}0^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{9}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{B}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_{12},I_9)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle B_{12} |\hat{0}_{\alpha}^{+} |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^{-} |I_0\rangle t_{A_3} t_{B_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle B_{12} |\hat{0}_{\alpha}^{+} |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^{-} |I_0\rangle t_{A_3} t_{B_{12},I_9} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 0^B \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle B_{12} |\hat{0}_{\alpha}^{+} |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^{-} |I_0\rangle t_{A_3} t_{B_{12},I_9} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 0^I \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle B_{12} |\hat{0}_{\alpha}^{+} |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^{-} |I_0\rangle t_{A_3} t_{B_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_{12} |\hat{0}_{\alpha}^{+} |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^{-} |I_0\rangle t_{A_3} t_{B_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_{12} |\hat{0}_{\alpha}^{+} |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^{-} |I_0\rangle t_{A_3} t_{B_{12},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_{14},I_7)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_2} t_{B_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_2} t_{B_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_2} t_{B_{14},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_2} t_{B_{14},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 0^B \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_2} t_{B_{14},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 0^I \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_2} t_{B_{14},I_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{3},B_{14},I_{7})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle \langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{14},I_{7}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle \langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{14},I_{7}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle \langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle \langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{14},I_{7}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}0^{I}\rangle \langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle \langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{14},I_{7}} \end{split}$$

$$\begin{split} &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A | \hat{g} | 0^I 0^B \rangle \langle A_3 | \hat{0}_{\beta}^+ \hat{1}_{\beta}^- | A_1 \rangle \langle B_{14} | \hat{0}_{\beta}^+ | B_1 \rangle \langle I_7 | \hat{0}_{\beta}^- | I_0 \rangle t_{A_3} t_{B_{14}, I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A | \hat{g} | 0^B 0^I \rangle \langle A_3 | \hat{1}_{\beta}^+ \hat{0}_{\beta}^- | A_1 \rangle \langle B_{14} | \hat{0}_{\beta}^+ | B_1 \rangle \langle I_7 | \hat{0}_{\beta}^- | I_0 \rangle t_{A_3} t_{B_{14}, I_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{2},B_{12},I_{10})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle \langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle \langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{A}|\hat{g}|1^{I}0^{B}\rangle \langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{A}|\hat{g}|0^{B}1^{I}\rangle \langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle \langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle \langle A_{2}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle \langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{3},B_{12},I_{10})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle \langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle \langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{12},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{A}|\hat{g}|1^{I}0^{B}\rangle \langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{12},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{A}|\hat{g}|0^{B}1^{I}\rangle \langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle \langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{A}1^{I}\rangle \langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_{14},I_8)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^- |I_0 \rangle t_{A_2} t_{B_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^- |I_0 \rangle t_{A_2} t_{B_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^- |I_0 \rangle t_{A_2} t_{B_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^- |I_0 \rangle t_{A_2} t_{B_{14},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^- |I_0 \rangle t_{A_2} t_{B_{14},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 1^I \rangle \langle A_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^- |I_0 \rangle t_{A_2} t_{B_{14},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 1^I \rangle \langle A_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_8 |\hat{1}_{\beta}^- |I_0 \rangle t_{A_2} t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_{14},I_8)\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_3}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|1^A1^I\rangle\langle A_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_3}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|1^A1^I\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_3}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|1^A1^I\rangle\langle A_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_3}t_{B_{14},I_8} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|1^I0^B\rangle\langle A_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_3}t_{B_{14},I_8} \\ &+\frac{-1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|0^B1^I\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_3}t_{B_{14},I_8} \\ &+\frac{-1}{2}\sum_{I}\langle 0^A1^A|\hat{g}|0^B1^I\rangle\langle A_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{A_3}t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_{11},I_9)\rangle = \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{11},I_9} \\ &+ \tfrac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{11},I_9} \\ &+ \tfrac{-1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{11},I_9} \\ &+ \tfrac{-1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{11},I_9} \\ &+ \tfrac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{11},I_9} \\ &+ \tfrac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_{13},I_7)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle t_{B_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle t_{B_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle t_{B_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle t_{B_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle t_{B_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle t_{B_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle t_{B_{13},I_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(B_{11},I_{10})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{11},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}0^{A}|\hat{g}|1^{B}1^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{11},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{A}|\hat{g}|1^{B}1^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_{13},I_8)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 1^I \rangle \langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 1^I \rangle \langle A_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 1^I \rangle \langle A_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 1^I \rangle \langle A_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|1^B 1^I \rangle \langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_{13},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 1^I \rangle \langle A_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_{13},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 1^I \rangle \langle A_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_{11},I_9)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0\rangle t_{A_2} t_{B_{11},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0\rangle t_{A_2} t_{B_{11},I_9} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 1^B \rangle \langle A_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0\rangle t_{A_2} t_{B_{11},I_9} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^B 0^I \rangle \langle A_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0\rangle t_{A_2} t_{B_{11},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0\rangle t_{A_2} t_{B_{11},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0\rangle t_{A_2} t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_{11},I_9)\rangle = \\ &+ \frac{1}{2} \sum_I \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1\rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0\rangle t_{A_3} t_{B_{11},I_9} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{11},I_{9}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{B}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{11},I_{9}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{11},I_{9}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{3}}t_{B_{11},I_{9}}\\ \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{2},B_{13},I_{7})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle \langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{7}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle \langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{7}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle \langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle \langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{7}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle \langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle \langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{7}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{A}|\hat{g}|0^{I}1^{B}\rangle \langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{7}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{A}|\hat{g}|1^{B}0^{I}\rangle \langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle \langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_{13},I_7)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 1^B \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^B 0^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^B 0^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^{+} |B_1\rangle \langle I_7 |\hat{0}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{2},B_{11},I_{10})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{11},I_{10}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{11},I_{10}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{B}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &+ \frac{-1}{2} \sum_{I} \langle 0^{A} 1^{A} | \hat{g} | 1^{B} 1^{I} \rangle \langle A_{2} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{11} | \hat{1}_{\alpha}^{+} | B_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{A_{2}} t_{B_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{I} \rangle \langle A_{2} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{11} | \hat{1}_{\alpha}^{+} | B_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{A_{2}} t_{B_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A} 1^{B} | \hat{g} | 1^{A} 1^{I} \rangle \langle A_{2} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{11} | \hat{1}_{\alpha}^{+} | B_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{A_{2}} t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_{11},I_{10})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_{11} |\hat{1}_{\alpha}^{+} |B_1 \rangle \langle I_{10} |\hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_3} t_{B_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_{11} |\hat{1}_{\alpha}^{+} |B_1 \rangle \langle I_{10} |\hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_3} t_{B_{11},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_{11} |\hat{1}_{\alpha}^{+} |B_1 \rangle \langle I_{10} |\hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_3} t_{B_{11},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^B 1^I \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_{11} |\hat{1}_{\alpha}^{+} |B_1 \rangle \langle I_{10} |\hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_3} t_{B_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_{11} |\hat{1}_{\alpha}^{+} |B_1 \rangle \langle I_{10} |\hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_3} t_{B_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_{11} |\hat{1}_{\alpha}^{+} |B_1 \rangle \langle I_{10} |\hat{1}_{\alpha}^{-} |I_0 \rangle t_{A_3} t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{2},B_{13},I_{8})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{8}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{8}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{8}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{8}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{B}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{8}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{8}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{2}}t_{B_{13},I_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_{13},I_8)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^{+} |B_1\rangle \langle I_8|\hat{1}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^{+} |B_1\rangle \langle I_8|\hat{1}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^{+} |B_1\rangle \langle I_8|\hat{1}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^{+} |B_1\rangle \langle I_8|\hat{1}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^{+} |B_1\rangle \langle I_8|\hat{1}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^{+} |B_1\rangle \langle I_8|\hat{1}_{\beta}^{-} |I_0\rangle t_{A_3} t_{B_{13},I_8} \end{split}$$

$$+ \tfrac{-1}{2} \sum_I \langle 0^A 1^A | \hat{g} | 1^B 1^I \rangle \langle A_3 | \hat{1}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle B_{13} | \hat{1}_\beta^+ | B_1 \rangle \langle I_8 | \hat{1}_\beta^- | I_0 \rangle t_{A_3} t_{B_{13},I_8}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},I_{9})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{B}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},I_{9}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{B}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},I_{7})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|0^{B}0^{I}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{7}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{B}0^{I}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{7}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{7}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{7}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{7}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},I_{10})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^B 1^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle t_{A_{12},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^B 1^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle t_{A_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 0^B \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle t_{A_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 0^B \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle t_{A_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle t_{A_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle t_{A_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle t_{A_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},I_{8})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|0^{B}1^{I}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{8}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{B}1^{I}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{8}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{8}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{8}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{8}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle \langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},I_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_2,I_9)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^B 0^I \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1 \rangle \langle B_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle t_{B_2} t_{A_{12},I_9} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 0^B 0^I \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1 \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle t_{B_2} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1 \rangle \langle B_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle t_{B_2} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1 \rangle \langle B_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle t_{B_2} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1 \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle t_{B_2} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1 \rangle \langle B_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle t_{B_2} t_{A_{12},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1 \rangle \langle B_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle t_{B_2} t_{A_{12},I_9} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{3},I_{9})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{B}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{12},I_{9}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{B}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{12},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{12},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{12},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{12},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{12},I_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_2, I_7)\rangle =$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{B}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{14},I_{7}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{B}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{14},I_{7}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{14},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{3},I_{7})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{B}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{14},I_{7}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{B}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{14},I_{7}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{14},I_{7}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{14},I_{7}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{14},I_{7}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{14},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{2},I_{10})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{B}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{12},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|0^{B}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{12},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_3,I_{10})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^B 1^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{B_3} t_{A_{12},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 0^B 1^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{B_3} t_{A_{12},I_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{12},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{12},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{12},I_{10}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_2,I_8)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^B 1^I \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1 \rangle \langle B_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1 \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{14},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 0^B 1^I \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1 \rangle \langle B_2 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |B_1 \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^I 1^B \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1 \rangle \langle B_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1 \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^I 1^B \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1 \rangle \langle B_2 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |B_1 \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^I 1^B \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1 \rangle \langle B_2 |\hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |B_1 \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^I 1^B \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1 \rangle \langle B_2 |\hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |B_1 \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^I 1^B \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1 \rangle \langle B_2 |\hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |B_1 \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_3,I_8)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^B 1^I \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle B_3 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle t_{B_3} t_{A_{14},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 0^B 1^I \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle B_3 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle t_{B_3} t_{A_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^I 1^B \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle B_3 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle t_{B_3} t_{A_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^I 1^B \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle B_3 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle t_{B_3} t_{A_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^I 1^B \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle B_3 |\hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle t_{B_3} t_{A_{14},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^I 1^B \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle B_3 |\hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle t_{B_3} t_{A_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},I_{9})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|0^{B}0^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},I_{9}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{B}0^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},I_{9}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},I_{9}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},I_{9}} \end{split}$$

$$\begin{split} &+\frac{1}{2} \sum_{I} \langle 1^A 1^B | \hat{g} | 0^I 1^B \rangle \langle A_{11} | \hat{1}_{\alpha}^+ | A_1 \rangle \langle B_0 | \hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle t_{A_{11},I_9} \\ &+\frac{1}{2} \sum_{I} \langle 1^A 1^B | \hat{g} | 0^I 1^B \rangle \langle A_{11} | \hat{1}_{\alpha}^+ | A_1 \rangle \langle B_0 | \hat{1}_{\beta}^+ \hat{1}_{\beta}^- | B_1 \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle t_{A_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},I_7)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^B 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle t_{A_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^B 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle t_{A_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 0^B \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle t_{A_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|0^I 1^B \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle t_{A_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 0^B \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle t_{A_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|0^I 1^B \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle t_{A_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|0^I 1^B \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle t_{A_{13},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},I_{10})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^B 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_{11},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^B 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^I 0^B \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^I 0^B \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle t_{A_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},I_8)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^B 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle t_{A_{13},I_8} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^B 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle t_{A_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^I 0^B \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle t_{A_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle t_{A_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^I 0^B \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle t_{A_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle t_{A_{13},I_8} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle t_{A_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{2},I_{9})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{B}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{9}} \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{B}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{9}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{9}} \\ \end{pmatrix}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_3,I_9)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 1^B 0^I \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_3|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_3} t_{A_{11},I_9} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^B 0^I \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_3|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_3} t_{A_{11},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_3|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_3} t_{A_{11},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_3|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_3} t_{A_{11},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_3|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_3} t_{A_{11},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_3|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_3} t_{A_{11},I_9} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_3|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle t_{B_3} t_{A_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_2,I_7)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 1^B 0^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle B_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{13},I_7} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^B 0^I \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle B_2| \hat{1}^+_{\beta} \hat{0}^-_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle B_2| \hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle B_2| \hat{1}^+_{\beta} \hat{0}^-_{\beta} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle B_2| \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{13},I_7} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 1^B \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1 \rangle \langle B_2| \hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |B_1 \rangle \langle I_7| \hat{0}^-_{\beta} |I_0 \rangle t_{B_2} t_{A_{13},I_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{3},I_{7})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{B}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{7}} \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{B}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{7}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{7}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{7}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{7}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{7}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{13}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|A_{13}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|A_{13}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|A_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{2},I_{10})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{B}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|0^{B}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{3},I_{10})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{B}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{11},I_{10}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|0^{B}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{11},I_{10}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_2,I_8)\rangle = \\ &+ \frac{-1}{2} \sum_I \langle 1^A 0^B |\hat{g}|1^B 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle t_{B_2} t_{A_{13},I_8} \end{split}$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{13},I_{8}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{13},I_{8}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{13},I_{8}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{13},I_{8}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{2}}t_{A_{13},I_{8}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{3},I_{8})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{8}} \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{8}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{8}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{8}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{8}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{8}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle t_{B_{3}}t_{A_{13},I_{8}} \\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_9,I_{12})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 0^I \rangle \langle A_0 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{B_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 0^I \rangle \langle A_0 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{B_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^B 0^I \rangle \langle A_0 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{B_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|0^B 0^I \rangle \langle A_0 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{B_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 0^I \rangle \langle A_0 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{B_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 0^I \rangle \langle A_0 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_7,I_{14})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_7|\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^{+} |I_0\rangle t_{B_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle B_7|\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^{+} |I_0\rangle t_{B_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_7|\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^{+} |I_0\rangle t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &+ \frac{-1}{2} \sum_{I} \langle 1^{A} 0^{B} | \hat{g} | 1^{A} 0^{I} \rangle \langle A_{0} | \hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | A_{1} \rangle \langle B_{7} | \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle t_{B_{7},I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A} 0^{A} | \hat{g} | 0^{B} 0^{I} \rangle \langle A_{0} | \hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{7} | \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle t_{B_{7},I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A} 1^{A} | \hat{g} | 0^{B} 0^{I} \rangle \langle A_{0} | \hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{7} | \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle t_{B_{7},I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_{10},I_{12})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle t_{B_{10},I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle t_{B_{10},I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_8,I_{14})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 0^I \rangle \langle A_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 0^I \rangle \langle A_0|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle t_{B_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 0^I \rangle \langle A_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |A_1\rangle \langle A_0|\hat{1}_{\beta}^+ |A_1\rangle \langle A_0|\hat{1}_{\beta}^- |A_1\rangle \langle A_0|\hat{1}_{\beta}^+ |A_1\rangle \langle A_0|\hat$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_9,I_{12})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 0^I \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 0^B \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{12}} \end{split}$$

$$+ \tfrac{-1}{2} \sum_I \langle 0^A 0^B | \hat{g} | 1^A 0^I \rangle \langle A_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | A_1 \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_{12} | \hat{0}_\alpha^+ | I_0 \rangle t_{A_2} t_{B_9, I_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_9,I_{12})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 0^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 0^B \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_9,I_{12}} \\ \end{pmatrix}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_7,I_{14})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 0^I \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 0^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 0^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_7,I_{14})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_3} t_{B_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_3} t_{B_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_3} t_{B_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_3} t_{B_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 0^I \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_3} t_{B_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 0^B \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_3} t_{B_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 0^B \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^{+} |I_0 \rangle t_{A_3} t_{B_7,I_{14}} \\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_{10},I_{12})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^B 0^I \rangle \langle A_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 1^B \rangle \langle A_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_{10},I_{12})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_3} t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_3} t_{B_{10},I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^B 0^I \rangle \langle A_3 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_3} t_{B_{10},I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^I 1^B \rangle \langle A_3 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_3} t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_3} t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_3} t_{B_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 0^I \rangle \langle A_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_3} t_{B_{10},I_{12}} \\ \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{2},B_{8},I_{14})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{2}}t_{B_{8},I_{14}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{2}}t_{B_{8},I_{14}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{2}}t_{B_{8},I_{14}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{2}}t_{B_{8},I_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{I}\rangle\langle A_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{2}}t_{B_{8},I_{14}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{B}\rangle\langle A_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{1}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle A_{1}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle A_{1}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle A_{1}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle A_{1}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle A_{1}|\hat{0}_{\beta}^{-}|$$

$$\langle (A_1, B_1)|\hat{H}|(A_3, B_8, I_{14})\rangle =$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{14}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{14}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{14}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}0^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{14}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{B}0^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{14}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|0^{I}1^{B}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{14}}\\ \end{aligned}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_9,I_{11})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 1^I \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^B 1^I \rangle \langle A_0|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|0^B 1^I \rangle \langle A_0|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 1^I \rangle \langle A_0|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_0|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{B_9,I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_7,I_{13})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 1^I \rangle \langle A_0 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{B_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^A 1^I \rangle \langle A_0 |\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{B_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_0 |\hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{B_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_0 |\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|0^B 1^I \rangle \langle A_0 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|0^B 1^I \rangle \langle A_0 |\hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|0^B 1^I \rangle \langle A_0 |\hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(B_{10},I_{11})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|0^{A}1^{I}\rangle \langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle \langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{A}|\hat{g}|1^{B}1^{I}\rangle\langle A_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{10},I_{11}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{A}|\hat{g}|1^{B}1^{I}\rangle\langle A_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{10},I_{11}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{A}1^{I}\rangle\langle A_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{10},I_{11}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(B_8,I_{13})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 1^I \rangle \langle A_0|\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_8|\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^{+} |I_0\rangle t_{B_8,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^A 1^I \rangle \langle A_0|\hat{0}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle B_8|\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^{+} |I_0\rangle t_{B_8,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 1^I \rangle \langle A_0|\hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_8|\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^{+} |I_0\rangle t_{B_8,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|1^A 1^I \rangle \langle A_0|\hat{1}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle B_8|\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^{+} |I_0\rangle t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^A |\hat{g}|1^B 1^I \rangle \langle A_0|\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_8|\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^{+} |I_0\rangle t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^A |\hat{g}|1^B 1^I \rangle \langle A_0|\hat{1}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_8|\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^{+} |I_0\rangle t_{B_8,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_9,I_{11})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 1^I \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_2} t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_1 |\hat{0}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{0}_{\alpha}^{+} |B_1 \rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_9,I_{11})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{A_3} t_{B_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^A 1^I \rangle \langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{A_3} t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}|0^B 1^I \rangle \langle A_3|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{A_3} t_{B_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}|1^I 0^B \rangle \langle A_3|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_1\rangle \langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle t_{A_3} t_{B_9,I_{11}} \end{split}$$

$$\begin{split} &+ \frac{-1}{2} \sum_{I} \langle 0^{A} 0^{B} | \hat{g} | 1^{A} 1^{I} \rangle \langle A_{3} | \hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} | A_{1} \rangle \langle B_{9} | \hat{0}_{\alpha}^{-} | B_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle t_{A_{3}} t_{B_{9}, I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A} 0^{B} | \hat{g} | 1^{A} 1^{I} \rangle \langle A_{3} | \hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} | A_{1} \rangle \langle B_{9} | \hat{0}_{\alpha}^{-} | B_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle t_{A_{3}} t_{B_{9}, I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_7,I_{13})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 1^I \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0 \rangle t_{A_2} t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_7,I_{13})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 0^B 1^I \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_7 |\hat{0}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_3} t_{B_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 0^B$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_{10},I_{11})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^B 1^I \rangle \langle A_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |A_1 \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1 \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0 \rangle t_{A_2} t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_3,B_{10},I_{11})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^B 1^I \rangle \langle A_3 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_3 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_3 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1 \rangle \langle B_{10} |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle I_{11} |\hat{1}_{\alpha}^{+} |I_0 \rangle t_{A_3} t_{B_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle B_1 |\hat{1}_{\alpha}^{-} |B_1 \rangle \langle B_1 |\hat{1}_{\alpha}^{-} |B_1 \rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_2,B_8,I_{13})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_8 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} |A_1\rangle \langle B_8 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_8 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^A 1^I \rangle \langle A_2 |\hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} |A_1\rangle \langle B_8 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^B 1^I \rangle \langle A_2 |\hat{0}_{\beta}^{+} \hat{1}_{\beta}^{-} |A_1\rangle \langle B_8 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_8 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_8 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_8 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_8 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_1 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle B_1 |\hat{1}_{\beta}^{-} |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^{+} |I_0\rangle t_{A_2} t_{B_8,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^A |\hat{g}| 1^I 1^B \rangle \langle A_2 |\hat{1}_{\beta}^{+} \hat{0}_{\beta}^{-} |A_1\rangle \langle A_2 |\hat{1}_{\beta}^{+} |A_1\rangle \langle A_2 |\hat{1}_{\beta}^{-} |A_1\rangle \langle A_2 |\hat{1}_{\beta}^{+} |A_1\rangle \langle A_2 |\hat{1}_{\beta}^{-} |A_1\rangle \langle A_2 |\hat{1}_{\beta}^{+$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{3},B_{8},I_{13})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{13}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{13}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{13}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{A}1^{I}\rangle\langle A_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{13}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{B}1^{I}\rangle\langle A_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{13}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{B}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{13}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}1^{A}|\hat{g}|1^{I}1^{B}\rangle\langle A_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{3}}t_{B_{8},I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_1)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 0^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle t_{A_{12},B_9} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 0^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0\rangle t_{A_{12},B_9} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^I |\hat{g}|0^B 1^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0\rangle t_{A_{12},B_9} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^I |\hat{g}|0^B 1^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0\rangle t_{A_{12},B_9} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 0^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle t_{A_{12},B_9} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_1|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0\rangle t_{A_{12},B_9} t_{I_1} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{7},I_{1})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{9},I_{2})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{2}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{2}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{2}} \end{split}$$

$$\langle (A_1, B_1) | \hat{H} | (A_{12}, B_9, I_3) \rangle =$$

$$+ \frac{1}{2} \sum_{I} \langle 0^A 0^I | \hat{g} | 0^B 1^I \rangle \langle A_{12} | \hat{0}^+_{\alpha} | A_1 \rangle \langle B_9 | \hat{0}^-_{\alpha} | B_1 \rangle \langle I_3 | \hat{0}^+_{\alpha} \hat{1}^-_{\alpha} | I_0 \rangle t_{A_{12}, B_9} t_{I_3}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{3}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{3}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{9}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{7},I_{2})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{2}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{2}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{2}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{7},I_{3})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{7}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{10},I_1)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 0^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{A_{12},B_{10}} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 0^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle \langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{12},B_{10}} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^I |\hat{g}| 1^B 1^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle \langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle t_{A_{12},B_{10}} t_{I_1} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{8},I_{1})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{10},I_{2})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{I}0^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|0^{I}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|0^{I}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{10},I_{3})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{I}0^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A}1^{B}|\hat{g}|1^{I}0^{I}\rangle \langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{12},B_{10}}t_{I_{3}} \end{split}$$

$$+ \tfrac{-1}{2} \sum_I \langle 0^A 1^B | \hat{g} | 0^I 1^I \rangle \langle A_{12} | \hat{0}_\alpha^+ | A_1 \rangle \langle B_{10} | \hat{1}_\alpha^- | B_1 \rangle \langle I_3 | \hat{1}_\alpha^+ \hat{0}_\alpha^- | I_0 \rangle t_{A_{12}, B_{10}} t_{I_3}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_2)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta} |I_0\rangle t_{A_{14},B_8} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta} |I_0\rangle t_{A_{14},B_8} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^I 0^I \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta} |I_0\rangle t_{A_{14},B_8} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 0^I 1^I \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta} |I_0\rangle t_{A_{14},B_8} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha} |I_0\rangle t_{A_{14},B_8} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha} |I_0\rangle t_{A_{14},B_8} t_{I_2} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{8},I_{3})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{14},B_{8}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_1)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}|0^B 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{A_{11},B_9} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}|0^B 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|I_0\rangle t_{A_{11},B_9} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^I |\hat{g}|0^B 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle t_{A_{11},B_9} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^I |\hat{g}|0^B 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|I_0\rangle t_{A_{11},B_9} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_1|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|I_0\rangle t_{A_{11},B_9} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^I 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_1|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|I_0\rangle t_{A_{11},B_9} t_{I_1} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{7},I_{1})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{1}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{1}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{9},I_{2})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{9},I_{3})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{3}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{3}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{9}}t_{I_{3}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_7, I_2)\rangle =$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{2}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{7},I_{3})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle \langle B_{7}|\hat{0}^{-}_{\beta}|B_{1}\rangle \langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle \langle B_{7}|\hat{0}^{-}_{\beta}|B_{1}\rangle \langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle \langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle \langle B_{7}|\hat{0}^{-}_{\beta}|B_{1}\rangle \langle I_{3}|\hat{0}^{+}_{\beta}\hat{1}^{-}_{\beta}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle \langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle \langle B_{7}|\hat{0}^{-}_{\beta}|B_{1}\rangle \langle I_{3}|\hat{1}^{+}_{\beta}\hat{0}^{-}_{\beta}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle \langle B_{7}|\hat{0}^{-}_{\beta}|B_{1}\rangle \langle I_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle \langle B_{7}|\hat{0}^{-}_{\beta}|B_{1}\rangle \langle I_{3}|\hat{1}^{+}_{\alpha}\hat{0}^{-}_{\alpha}|I_{0}\rangle t_{A_{13},B_{7}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{10},I_{1})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{1}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{1}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{1}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}1^{I}1^{I}\rangle \langle A_{11}|\hat{1}_{\alpha}^{+}|A_{11}\rangle \langle B_{10}|\hat{1}_{\alpha}^{-}|B_{11}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|A_{11}\rangle \langle I_{11}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_1)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_1|\hat{0}^+_{\beta}\hat{0}^-_{\beta} |I_0\rangle t_{A_{13},B_8} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^I |\hat{g}| 1^B 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_1|\hat{1}^+_{\beta}\hat{1}^-_{\beta} |I_0\rangle t_{A_{13},B_8} t_{I_1} \end{split}$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{8}}t_{I_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{13},B_{8}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{13},B_{8}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{13},B_{8}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{10},I_2)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha} |I_0\rangle t_{A_{11},B_{10}} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta} |I_0\rangle t_{A_{11},B_{10}} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha} |I_0\rangle t_{A_{11},B_{10}} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta} |I_0\rangle t_{A_{11},B_{10}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 1^I 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_2|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha} |I_0\rangle t_{A_{11},B_{10}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^I 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_2|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha} |I_0\rangle t_{A_{11},B_{10}} t_{I_2} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{10},I_{3})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{11},B_{10}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_2)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta} |I_0\rangle t_{A_{13},B_8} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta} |I_0\rangle t_{A_{13},B_8} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 1^I 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_2|\hat{0}^+_{\beta}\hat{1}^-_{\beta} |I_0\rangle t_{A_{13},B_8} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^I 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_2|\hat{1}^+_{\beta}\hat{0}^-_{\beta} |I_0\rangle t_{A_{13},B_8} t_{I_2} \end{split}$$

$$\begin{split} &+\frac{1}{2} \sum_{I} \langle 1^{A} 0^{I} | \hat{g} | 1^{B} 1^{I} \rangle \langle A_{13} | \hat{1}^{+}_{\beta} | A_{1} \rangle \langle B_{8} | \hat{1}^{-}_{\beta} | B_{1} \rangle \langle I_{2} | \hat{0}^{+}_{\alpha} \hat{1}^{-}_{\alpha} | I_{0} \rangle t_{A_{13},B_{8}} t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A} 0^{I} | \hat{g} | 1^{B} 1^{I} \rangle \langle A_{13} | \hat{1}^{+}_{\beta} | A_{1} \rangle \langle B_{8} | \hat{1}^{-}_{\beta} | B_{1} \rangle \langle I_{2} | \hat{1}^{+}_{\alpha} \hat{0}^{-}_{\alpha} | I_{0} \rangle t_{A_{13},B_{8}} t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_3)\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta} |I_0\rangle t_{A_{13},B_8} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta} |I_0\rangle t_{A_{13},B_8} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 1^I 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta} |I_0\rangle t_{A_{13},B_8} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^I 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta} |I_0\rangle t_{A_{13},B_8} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha} |I_0\rangle t_{A_{13},B_8} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha} |I_0\rangle t_{A_{13},B_8} t_{I_3} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,I_{12})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^B 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_0 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^B 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_0 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 0^B \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_0 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^I 1^B \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_0 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 0^B \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_0 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^I 1^B \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_0 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^I 1^B \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_0 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle t_{A_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,I_{14})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^B 0^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_0 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^B 0^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_0 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 0^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_0 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 0^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_0 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_0 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_0 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_0 |\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{A_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_2,I_{12})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^B 0^I \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_2|\hat{0}_\alpha^+ \hat{1}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{B_2} t_{A_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^B 0^I \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_2|\hat{1}_\alpha^+ \hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{B_2} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_2|\hat{0}_\alpha^+ \hat{1}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{B_2} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_2|\hat{1}_\alpha^+ \hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{B_2} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_2|\hat{0}_\beta^+ \hat{1}_\beta^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{B_2} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_2|\hat{1}_\beta^+ \hat{0}_\beta^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{B_2} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_2|\hat{1}_\beta^+ \hat{0}_\beta^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{B_2} t_{A_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_3,I_{12})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^B 0^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^B 0^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{12}} \\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_2,I_{14})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^B 0^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{B_2} t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^B 0^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{B_2} t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{B_2} t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{B_2} t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{B_2} t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{B_2} t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle t_{B_2} t_{A_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_3,I_{14})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^B 0^I \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_3 |\hat{0}_\beta^+ \hat{1}_\beta^- |B_1 \rangle \langle I_{14} |\hat{0}_\beta^+ |I_0 \rangle t_{B_3} t_{A_7,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^B 0^I \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_3 |\hat{1}_\beta^+ \hat{0}_\beta^- |B_1 \rangle \langle I_{14} |\hat{0}_\beta^+ |I_0 \rangle t_{B_3} t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_3 |\hat{0}_\beta^+ \hat{1}_\beta^- |B_1 \rangle \langle I_{14} |\hat{0}_\beta^+ |I_0 \rangle t_{B_3} t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_3 |\hat{0}_\alpha^+ \hat{1}_\alpha^- |B_1 \rangle \langle I_{14} |\hat{0}_\beta^+ |I_0 \rangle t_{B_3} t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_3 |\hat{1}_\beta^+ \hat{0}_\beta^- |B_1 \rangle \langle I_{14} |\hat{0}_\beta^+ |I_0 \rangle t_{B_3} t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_3 |\hat{1}_\alpha^+ \hat{0}_\alpha^- |B_1 \rangle \langle I_{14} |\hat{0}_\beta^+ |I_0 \rangle t_{B_3} t_{A_7,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_3 |\hat{1}_\alpha^+ \hat{0}_\alpha^- |B_1 \rangle \langle I_{14} |\hat{0}_\beta^+ |I_0 \rangle t_{B_3} t_{A_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},I_{12})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^B 0^I \rangle \langle A_{10}|\hat{1}_\alpha^- |A_1\rangle \langle B_0|\hat{0}_\alpha^+ \hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{A_{10},I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 1^B 0^I \rangle \langle A_{10}|\hat{1}_\alpha^- |A_1\rangle \langle B_0|\hat{1}_\alpha^+ \hat{1}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{A_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 0^B \rangle \langle A_{10}|\hat{1}_\alpha^- |A_1\rangle \langle B_0|\hat{0}_\alpha^+ \hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{A_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^I 1^B \rangle \langle A_{10}|\hat{1}_\alpha^- |A_1\rangle \langle B_0|\hat{1}_\alpha^+ \hat{1}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{A_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}| 0^I 0^B \rangle \langle A_{10}|\hat{1}_\alpha^- |A_1\rangle \langle B_0|\hat{0}_\beta^+ \hat{0}_\beta^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{A_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^I 1^B \rangle \langle A_{10}|\hat{1}_\alpha^- |A_1\rangle \langle B_0|\hat{1}_\beta^+ \hat{1}_\beta^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{A_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^I 1^B \rangle \langle A_{10}|\hat{1}_\alpha^- |A_1\rangle \langle B_0|\hat{1}_\beta^+ \hat{1}_\beta^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle t_{A_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},I_{14})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{B}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{14}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{B}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{14}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{14}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{14}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{14}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{14}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{14}} \end{split}$$

$$\langle (A_1, B_1) | \hat{H} | (A_{10}, B_2, I_{12}) \rangle =$$

$$+ \frac{1}{2} \sum_{I} \langle 1^A 1^B | \hat{g} | 0^B 0^I \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle B_2 | \hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- | B_1 \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle t_{B_2} t_{A_{10}, I_{12}}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{B}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{12}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{12}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{12}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{12}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{12}}\\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_3,I_{12})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|0^B 0^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle t_{B_3} t_{A_{10},I_{12}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^B 0^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle t_{B_3} t_{A_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle t_{B_3} t_{A_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle t_{B_3} t_{A_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle t_{B_3} t_{A_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle t_{B_3} t_{A_{10},I_{12}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle t_{B_3} t_{A_{10},I_{12}} \\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_2,I_{14})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|0^B 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle t_{B_2} t_{A_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^B 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_2 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle t_{B_2} t_{A_8,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle t_{B_2} t_{A_8,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_2 |\hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle t_{B_2} t_{A_8,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_2 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle t_{B_2} t_{A_8,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_2 |\hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle t_{B_2} t_{A_8,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_2 |\hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle t_{B_2} t_{A_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_3,I_{14})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}|0^B 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_3 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle t_{B_3} t_{A_8,I_{14}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^B 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_3 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle t_{B_3} t_{A_8,I_{14}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^B \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_3 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle t_{B_3} t_{A_8,I_{14}} \end{split}$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{B_{3}}t_{A_{8},I_{14}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{B_{3}}t_{A_{8},I_{14}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle t_{B_{3}}t_{A_{8},I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,I_{11})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^B 1^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^B 1^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 0^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{1}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 0^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_0|\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle A_1|\hat{0}_{\beta}^+ |A_1\rangle \langle A_1|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,I_{13})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|0^B1^I\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{A_7,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^A1^B|\hat{g}|1^B1^I\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{A_7,I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|1^I0^B\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_0|\hat{0}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{A_7,I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^A0^B|\hat{g}|1^I0^B\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_0|\hat{0}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{A_7,I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^A1^B|\hat{g}|1^I1^B\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_0|\hat{1}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{A_7,I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^A1^B|\hat{g}|1^I1^B\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{A_7,I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^A1^B|\hat{g}|1^I1^B\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_0|\hat{1}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{A_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_2,I_{11})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^B 1^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_2} t_{A_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^B 1^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_2|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_2} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_2|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_2} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_2|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_2} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_2|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_2} t_{A_9,I_{11}} \end{split}$$

$$+ \tfrac{-1}{2} \sum_I \langle 0^A 0^B | \hat{g} | 1^I 1^B \rangle \langle A_9 | \hat{0}_\alpha^- | A_1 \rangle \langle B_2 | \hat{1}_\beta^+ \hat{0}_\beta^- | B_1 \rangle \langle I_{11} | \hat{1}_\alpha^+ | I_0 \rangle t_{B_2} t_{A_9, I_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_3,I_{11})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^B 1^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^B 1^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_3|\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle t_{B_3} t_{A_9,I_{11}} \\ \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{2},I_{13})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{B}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{7},I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{7},I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{7},I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{7},I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{7},I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{7},I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_3,I_{13})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0 \rangle t_{B_3} t_{A_7,I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0 \rangle t_{B_3} t_{A_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0 \rangle t_{B_3} t_{A_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_3 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0 \rangle t_{B_3} t_{A_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0 \rangle t_{B_3} t_{A_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_3 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0 \rangle t_{B_3} t_{A_7,I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^B \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_3 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0 \rangle t_{B_3} t_{A_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},I_{11})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{10},I_{11}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{10},I_{11}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{A_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},I_{13})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{B}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{0}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{A_{8},I_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{2},I_{11})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{B}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{11}} \\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{11}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{11}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{11}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{11}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{10},I_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_3, I_{11})\rangle =$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 1^{A}1^{B}|\hat{g}|0^{B}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{3}}t_{A_{10},I_{11}}\\ &+\frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{B}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{3}}t_{A_{10},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{3}}t_{A_{10},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{3}}t_{A_{10},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{3}}t_{A_{10},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{3}}t_{A_{10},I_{11}}\\ &+\frac{-1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle t_{B_{3}}t_{A_{10},I_{11}}\\ \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{2},I_{13})\rangle = \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|0^{B}1^{I}\rangle \langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{8},I_{13}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{B}1^{I}\rangle \langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{8},I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|B_{1}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{8},I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|B_{1}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{8},I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|B_{1}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{8},I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{8},I_{13}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{B}\rangle \langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle \langle B_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|B_{1}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle t_{B_{2}}t_{A_{8},I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_3,I_{13})\rangle = \\ &+\frac{1}{2}\sum_{I}\langle 1^A1^B|\hat{g}|0^B1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{B_3}t_{A_8,I_{13}} \\ &+\frac{1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|1^B1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{B_3}t_{A_8,I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|1^I1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_3|\hat{0}^+_{\beta}\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{B_3}t_{A_8,I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|1^I1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_3|\hat{0}^+_{\alpha}\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{B_3}t_{A_8,I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|1^I1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_3|\hat{1}^+_{\beta}\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{B_3}t_{A_8,I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|1^I1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{B_3}t_{A_8,I_{13}} \\ &+\frac{-1}{2}\sum_{I}\langle 1^A0^B|\hat{g}|1^I1^B\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_3|\hat{1}^+_{\alpha}\hat{0}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle t_{B_3}t_{A_8,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_1)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 0^I \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_1|\hat{0}_\alpha^+ \hat{0}_\alpha^- |I_0\rangle t_{A_9,B_{12}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 0^I \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_1|\hat{0}_\beta^+ \hat{0}_\beta^- |I_0\rangle t_{A_9,B_{12}} t_{I_1} \end{split}$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{12}}t_{I_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{9},B_{12}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{12}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{12}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_1)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 0^I \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_{14} |\hat{0}_\beta^+ |B_1 \rangle \langle I_1 |\hat{0}_\beta^+ \hat{0}_\beta^- |I_0 \rangle t_{A_7,B_{14}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^I |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_{14} |\hat{0}_\beta^+ |B_1 \rangle \langle I_1 |\hat{1}_\beta^+ \hat{1}_\beta^- |I_0 \rangle t_{A_7,B_{14}} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 0^I \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_{14} |\hat{0}_\beta^+ |B_1 \rangle \langle I_1 |\hat{0}_\beta^+ \hat{0}_\beta^- |I_0 \rangle t_{A_7,B_{14}} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 1^I \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_{14} |\hat{0}_\beta^+ |B_1 \rangle \langle I_1 |\hat{1}_\beta^+ \hat{1}_\beta^- |I_0 \rangle t_{A_7,B_{14}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 0^I \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_{14} |\hat{0}_\beta^+ |B_1 \rangle \langle I_1 |\hat{1}_\alpha^+ \hat{1}_\alpha^- |I_0 \rangle t_{A_7,B_{14}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^I |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_\beta^- |A_1 \rangle \langle B_{14} |\hat{0}_\beta^+ |B_1 \rangle \langle I_1 |\hat{1}_\alpha^+ \hat{1}_\alpha^- |I_0 \rangle t_{A_7,B_{14}} t_{I_1} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{12},I_{2})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{12}}t_{I_{2}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{9},B_{12}}t_{I_{2}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{12}}t_{I_{2}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{9},B_{12}}t_{I_{2}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{12}}t_{I_{2}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{12}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_3)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_3|\hat{0}_\alpha^+ \hat{1}_\alpha^- |I_0\rangle t_{A_9,B_{12}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_3|\hat{0}_\beta^+ \hat{1}_\beta^- |I_0\rangle t_{A_9,B_{12}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_3|\hat{1}_\alpha^+ \hat{0}_\alpha^- |I_0\rangle t_{A_9,B_{12}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_3|\hat{1}_\beta^+ \hat{0}_\beta^- |I_0\rangle t_{A_9,B_{12}} t_{I_3} \end{split}$$

$$\begin{split} &+\frac{1}{2} \sum_{I} \langle 0^{A} 0^{B} | \hat{g} | 0^{I} 1^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{12} | \hat{0}_{\alpha}^{+} | B_{1} \rangle \langle I_{3} | \hat{0}_{\alpha}^{+} \hat{1}_{\alpha}^{-} | I_{0} \rangle t_{A_{9},B_{12}} t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 0^{A} 0^{B} | \hat{g} | 1^{I} 0^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{12} | \hat{0}_{\alpha}^{+} | B_{1} \rangle \langle I_{3} | \hat{1}_{\alpha}^{+} \hat{0}_{\alpha}^{-} | I_{0} \rangle t_{A_{9},B_{12}} t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_2)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 0^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_2 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1 \rangle \langle I_2 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_2} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_3)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 0^B |\hat{g}|1^I 0^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_3 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1 \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1 \rangle \langle I_3 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle t_{A_7,B_{14}} t_{I_3} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{12},I_{1})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{1}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|0^{I}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{1}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_1)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}|0^B 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_1 |\hat{0}^+_{\beta} \hat{0}^-_{\beta} |I_0 \rangle t_{A_8,B_{14}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^I |\hat{g}|0^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_1 |\hat{1}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle t_{A_8,B_{14}} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_1 |\hat{0}^+_{\beta} \hat{0}^-_{\beta} |I_0 \rangle t_{A_8,B_{14}} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^I 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_1 |\hat{1}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle t_{A_8,B_{14}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}|0^B 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_1 |\hat{0}^+_{\alpha} \hat{0}^-_{\alpha} |I_0 \rangle t_{A_8,B_{14}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^I |\hat{g}|0^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_1 |\hat{1}^+_{\alpha} \hat{1}^-_{\alpha} |I_0 \rangle t_{A_8,B_{14}} t_{I_1} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{12},I_{2})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{12},I_{3})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{12}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_2)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle t_{A_8,B_{14}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_2 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |I_0 \rangle t_{A_8,B_{14}} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle t_{A_8,B_{14}} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 0^B |\hat{g}|1^I 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_2 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |I_0 \rangle t_{A_8,B_{14}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_2 |\hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |I_0 \rangle t_{A_8,B_{14}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}|0^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_2 |\hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |I_0 \rangle t_{A_8,B_{14}} t_{I_2} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{14},I_{3})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{8},B_{14}}t_{I_{3}} \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{8},B_{14}}t_{I_{3}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{8},B_{14}}t_{I_{3}} \\ &+ \frac{1}{2}\sum_{I}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{8},B_{14}}t_{I_{3}} \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{8},B_{14}}t_{I_{3}} \\ &+ \frac{-1}{2}\sum_{I}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{8},B_{14}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_1)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 0^I \rangle \langle A_9 |\hat{0}_\alpha^- |A_1 \rangle \langle B_{11}| \hat{1}_\alpha^+ |B_1 \rangle \langle I_1 |\hat{0}_\alpha^+ \hat{0}_\alpha^- |I_0 \rangle t_{A_9,B_{11}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 0^I \rangle \langle A_9 |\hat{0}_\alpha^- |A_1 \rangle \langle B_{11}| \hat{1}_\alpha^+ |B_1 \rangle \langle I_1 |\hat{0}_\beta^+ \hat{0}_\beta^- |I_0 \rangle t_{A_9,B_{11}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^I |\hat{g}| 1^B 1^I \rangle \langle A_9 |\hat{0}_\alpha^- |A_1 \rangle \langle B_{11}| \hat{1}_\alpha^+ |B_1 \rangle \langle I_1 |\hat{1}_\alpha^+ \hat{1}_\alpha^- |I_0 \rangle t_{A_9,B_{11}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 1^I |\hat{g}| 1^B 1^I \rangle \langle A_9 |\hat{0}_\alpha^- |A_1 \rangle \langle B_{11}| \hat{1}_\alpha^+ |B_1 \rangle \langle I_1 |\hat{1}_\beta^+ \hat{1}_\beta^- |I_0 \rangle t_{A_9,B_{11}} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 0^I 0^I \rangle \langle A_9 |\hat{0}_\alpha^- |A_1 \rangle \langle B_{11}| \hat{1}_\alpha^+ |B_1 \rangle \langle I_1 |\hat{0}_\alpha^+ \hat{0}_\alpha^- |I_0 \rangle t_{A_9,B_{11}} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^I 1^I \rangle \langle A_9 |\hat{0}_\alpha^- |A_1 \rangle \langle B_{11}| \hat{1}_\alpha^+ |B_1 \rangle \langle I_1 |\hat{1}_\alpha^+ \hat{1}_\alpha^- |I_0 \rangle t_{A_9,B_{11}} t_{I_1} \end{split}$$

$$\langle (A_1, B_1) | \hat{H} | (A_7, B_{13}, I_1) \rangle =$$

$$+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I | \hat{g} | 1^B 0^I \rangle \langle A_7 | \hat{0}^-_{\beta} | A_1 \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_1 | \hat{0}^+_{\beta} \hat{0}^-_{\beta} | I_0 \rangle t_{A_7, B_{13}} t_{I_1}$$

$$\begin{split} &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{7},B_{13}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{7},B_{13}}t_{I_{1}}\\ &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{7},B_{13}}t_{I_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{7},B_{13}}t_{I_{1}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{7},B_{13}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{11},I_{2})\rangle = \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{11}}t_{I_{2}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{9},B_{11}}t_{I_{2}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{11}}t_{I_{2}} \\ &+ \frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{9},B_{11}}t_{I_{2}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{11}}t_{I_{2}} \\ &+ \frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{9},B_{11}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_3)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1 \rangle \langle I_3 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle t_{A_9,B_{11}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1 \rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_9,B_{11}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1 \rangle \langle I_3 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle t_{A_9,B_{11}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1 \rangle \langle I_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_9,B_{11}} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 0^I 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1 \rangle \langle I_3 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0 \rangle t_{A_9,B_{11}} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^I 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1 \rangle \langle I_3 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle t_{A_9,B_{11}} t_{I_3} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_2)\rangle = \\ &+ \frac{-1}{2} \sum_I \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}| \hat{1}_{\beta}^+ |B_1\rangle \langle I_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0\rangle t_{A_7,B_{13}} t_{I_2} \\ &+ \frac{-1}{2} \sum_I \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}| \hat{1}_{\beta}^+ |B_1\rangle \langle I_2 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |I_0\rangle t_{A_7,B_{13}} t_{I_2} \\ &+ \frac{1}{2} \sum_I \langle 0^A 1^B |\hat{g}| 0^I 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}| \hat{1}_{\beta}^+ |B_1\rangle \langle I_2 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0\rangle t_{A_7,B_{13}} t_{I_2} \end{split}$$

$$\begin{split} &+\frac{1}{2}\sum_{I}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{7},B_{13}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{7},B_{13}}t_{I_{2}}\\ &+\frac{-1}{2}\sum_{I}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{7},B_{13}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_3)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}| \hat{1}_{\beta}^+ |B_1\rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0\rangle t_{A_7,B_{13}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}| \hat{1}_{\beta}^+ |B_1\rangle \langle I_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |I_0\rangle t_{A_7,B_{13}} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 0^I 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}| \hat{1}_{\beta}^+ |B_1\rangle \langle I_3 |\hat{0}_{\beta}^+ \hat{1}_{\beta}^- |I_0\rangle t_{A_7,B_{13}} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^I 0^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}| \hat{1}_{\beta}^+ |B_1\rangle \langle I_3 |\hat{1}_{\beta}^+ \hat{0}_{\beta}^- |I_0\rangle t_{A_7,B_{13}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}| \hat{1}_{\beta}^+ |B_1\rangle \langle I_3 |\hat{0}_{\alpha}^+ \hat{1}_{\alpha}^- |I_0\rangle t_{A_7,B_{13}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 0^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}| \hat{1}_{\beta}^+ |B_1\rangle \langle I_3 |\hat{1}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0\rangle t_{A_7,B_{13}} t_{I_3} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{11},I_{1})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{0}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{1}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}1^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{1}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{1}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|0^{I}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{0}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{1}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{1}|\hat{1}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{1}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_1)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 0^I \rangle \langle A_8 |\hat{1}_{\beta}^- |A_1 \rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_8,B_{13}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 1^I |\hat{g}| 1^B 1^I \rangle \langle A_8 |\hat{1}_{\beta}^- |A_1 \rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1 \rangle \langle I_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_8,B_{13}} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^I 0^I \rangle \langle A_8 |\hat{1}_{\beta}^- |A_1 \rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1 \rangle \langle I_1 |\hat{0}_{\beta}^+ \hat{0}_{\beta}^- |I_0 \rangle t_{A_8,B_{13}} t_{I_1} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 1^I 1^I \rangle \langle A_8 |\hat{1}_{\beta}^- |A_1 \rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1 \rangle \langle I_1 |\hat{1}_{\beta}^+ \hat{1}_{\beta}^- |I_0 \rangle t_{A_8,B_{13}} t_{I_1} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 0^I \rangle \langle A_8 |\hat{1}_{\beta}^- |A_1 \rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1 \rangle \langle I_1 |\hat{0}_{\alpha}^+ \hat{0}_{\alpha}^- |I_0 \rangle t_{A_8,B_{13}} t_{I_1} \end{split}$$

$$+ \tfrac{-1}{2} \sum_I \langle 1^A 1^I | \hat{g} | 1^B 1^I \rangle \langle A_8 | \hat{1}^-_\beta | A_1 \rangle \langle B_{13} | \hat{1}^+_\beta | B_1 \rangle \langle I_1 | \hat{1}^+_\alpha \hat{1}^-_\alpha | I_0 \rangle t_{A_8,B_{13}} t_{I_1}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{11},I_{2})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{2}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|0^{I}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{2}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{2}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{2}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{11},I_{3})\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{0}_{\beta}^{+}\hat{1}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{3}} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^{A}0^{I}|\hat{g}|1^{B}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{1}_{\beta}^{+}\hat{0}_{\beta}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|0^{I}1^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{0}_{\alpha}^{+}\hat{1}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{3}} \\ &+ \frac{1}{2} \sum_{I} \langle 1^{A}1^{B}|\hat{g}|1^{I}0^{I}\rangle \langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle \langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle \langle I_{3}|\hat{1}_{\alpha}^{+}\hat{0}_{\alpha}^{-}|I_{0}\rangle t_{A_{10},B_{11}}t_{I_{3}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_2)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0\rangle t_{A_8,B_{13}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_2 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |I_0\rangle t_{A_8,B_{13}} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^I 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_2 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0\rangle t_{A_8,B_{13}} t_{I_2} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 1^I 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_2 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |I_0\rangle t_{A_8,B_{13}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_2 |\hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |I_0\rangle t_{A_8,B_{13}} t_{I_2} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_2 |\hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |I_0\rangle t_{A_8,B_{13}} t_{I_2} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_3)\rangle = \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1 \rangle \langle I_3 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle t_{A_8,B_{13}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1 \rangle \langle I_3 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |I_0 \rangle t_{A_8,B_{13}} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 0^I 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1 \rangle \langle I_3 |\hat{0}^+_{\beta} \hat{1}^-_{\beta} |I_0 \rangle t_{A_8,B_{13}} t_{I_3} \\ &+ \frac{1}{2} \sum_{I} \langle 1^A 1^B |\hat{g}| 1^I 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1 \rangle \langle I_3 |\hat{1}^+_{\beta} \hat{0}^-_{\beta} |I_0 \rangle t_{A_8,B_{13}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1 \rangle \langle I_3 |\hat{0}^+_{\alpha} \hat{1}^-_{\alpha} |I_0 \rangle t_{A_8,B_{13}} t_{I_3} \\ &+ \frac{-1}{2} \sum_{I} \langle 1^A 0^I |\hat{g}| 1^B 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1 \rangle \langle I_3 |\hat{1}^+_{\alpha} \hat{0}^-_{\alpha} |I_0 \rangle t_{A_8,B_{13}} t_{I_3} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{12},K_9,L_9)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^K0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle\langle L_9|\hat{0}_{\alpha}^{-}|L_0\rangle t_{A_1,B_1}t_{I_{12},K_9}t_{J_{12},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L0^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle\langle L_9|\hat{0}_{\alpha}^{-}|L_0\rangle t_{A_1,B_1}t_{I_{12},K_9}t_{J_{12},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^K0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle\langle L_9|\hat{0}_{\alpha}^{-}|L_0\rangle t_{A_1,B_1}t_{I_{12},L_9}t_{J_{12},K_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^K0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle\langle L_9|\hat{0}_{\alpha}^{-}|L_0\rangle t_{A_1,B_1}t_{I_{12},L_9}t_{J_{12},K_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^K0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle\langle L_9|\hat{0}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},K_9}t_{J_{12},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L0^K\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle\langle L_9|\hat{0}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_9}t_{J_{12},K_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^K0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle\langle L_9|\hat{0}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_9}t_{J_{12},K_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^K0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle\langle L_9|\hat{0}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_9}t_{J_{12},K_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^K0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle\langle L_9|\hat{0}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_9}t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{14},K_{7},L_{7})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{14},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{14},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{7}}t_{J_{14},K_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{14},K_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{14},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{14},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{14},K_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{14},K_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{$$

$$+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{14} | \hat{0}^{+}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{7} | \hat{0}^{-}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14}, L_{7}} t_{J_{14}, K_{7}} t_{A_{1}} t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{14},K_9,L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},K_9} t_{J_{14},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_{14},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{12},K_9,L_{10})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K} \left\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{9}}t_{J_{12},L_{10}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \left\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{9}}t_{J_{12},L_{10}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \left\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{12},K_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \left\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \left\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \left\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L} \left\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{12},K_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L} \left\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{12},K_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\left\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{14},K_{7},L_{8})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{14},L_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{14},L_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{8}}t_{J_{14},K_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{14},L_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{14},L_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{14},L_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{14},K_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{14},K_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{14},K_9,L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},K_9} t_{J_{14},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{12},K_{10},L_9)\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K} \left\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{12},L_{9}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{12},L_{9}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{9}}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{12},L_{9}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{12},L_{9}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{L}\sum_{J}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{14},K_8,L_7)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^K0^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},K_8}t_{J_{14},L_7}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},K_8}t_{J_{14},L_7}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^K0^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},L_7}t_{J_{14},K_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},K_8}t_{J_{14},L_7}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},K_8}t_{J_{14},L_7}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},K_8}t_{J_{14},L_7}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},K_8}t_{J_{14},L_7}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},K_8}t_{J_{14},K_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},L_7}t_{J_{14},K_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},L_7}t_{J_{14},K_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle I_14|\hat{0}^+_{$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{14}, K_{10}, L_7)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{14},L_{7}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{12}, K_{10}, L_{10})\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{12},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{12},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 0^{I}0^{J}|\hat{$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{14}, K_8, L_8)\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{14},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{14},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{8}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{14},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{14},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{L}1^{K}\rangle\langle I$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{14}, K_{10}, L_8)\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{14},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{14},L_{8}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{11},K_{9},L_{9})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{9}}t_{J_{11},L_{9}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{9}}t_{J_{11},L_{9}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{9}}t_{J_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{11},L_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{11},L_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{13},K_{7},L_{7})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{13},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{13},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{7}}t_{J_{13},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{13},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{13},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{13},K_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{J_{13},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{J_{13},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{13},K_9,L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},K_9} t_{J_{13},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_{13},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{11},K_9,L_{10})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^J|\hat{g}|0^K 1^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{12},K_9}t_{J_{11},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^J|\hat{g}|1^L 0^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{12},K_9}t_{J_{11},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^J|\hat{g}|0^K 1^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{12},L_{10}}t_{J_{11},K_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^J|\hat{g}|0^K 1^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{12},K_9}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^J|\hat{g}|0^K 1^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},K_9}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^J|\hat{g}|1^L 0^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},K_9}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^J|\hat{g}|0^K 1^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},K_9}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^J|\hat{g}|0^K 1^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_{10}}t_{J_{11},K_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^J|\hat{g}|0^K 1^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_{10}}t_{J_{11},K_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^I 1^J|\hat{g}|0^K 1^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_{10}}t_{J_{11},K_9}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 0^I 1^J|\hat{g}|0^K 1^L\rangle\langle I_{1$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{13},K_{7},L_{8})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{13},L_{8}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{13},L_{8}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{8}}t_{J_{13},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{13},L_{8}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{13},L_{8}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{13},L_{8}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{13},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{13},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{13},K_9,L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},K_9} t_{J_{13},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_{13},L_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{11}, K_{10}, L_9)\rangle =$$

$$+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1, B_1} t_{I_{12}, K_{10}} t_{J_{11}, L_9}$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{11},L_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{9}}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{9}}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{11},L_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{A_{1}}t_{A_{1}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{13}, K_8, L_7)\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\right\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{13},L_{7}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\right\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{13},L_{7}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\right\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{7}}t_{J_{13},K_{8}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\right\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{13},L_{7}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\right\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{13},L_{7}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\right\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{13},L_{7}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\right\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{J_{13},K_{8}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\right\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{J_{13},K_{8}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\right\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{I_{14},L_{7}}t_{I_{14$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{13},K_{10},L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_{13},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_{13},L_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{11},K_{10},L_{10})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{11},L_{10}}\\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{11},L_{10}}\\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{11},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{11},K_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{11},K_{10}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{13}, K_8, L_8)\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{13},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{13},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{8}}t_{J_{13},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{13},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}1^{J}1^{J}|\hat{g$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{13},K_{10},L_{8})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{13},L_{8}}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{13},L_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{12},K_9,L_9)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^I0^J|\hat{g}|0^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},K_9}t_{J_{12},L_9}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L0^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},K_9}t_{J_{12},L_9}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},L_9}t_{J_{12},K_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},L_9}t_{J_{12},K_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},K_9}t_{J_{12},L_9} \end{split}$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, K_{9}} t_{J_{12}, L_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 0^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, L_{9}} t_{J_{12}, K_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, L_{9}} t_{J_{12}, K_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{13},J_{14},K_{7},L_{7})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{14},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{14},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{7}}t_{J_{14},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{14},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{14},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{14},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{14},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{13},$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{11},J_{14},K_{9},L_{7})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{14},L_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{12},K_9,L_{10})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^L 0^K \rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1,B_1} t_{I_{11},L_{10}} t_{J_{12},K_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^L 0^K \rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1,B_1} t_{I_{11},L_{10}} t_{J_{12},K_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},K_9} t_{J_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^L 0^K \rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},K_9} t_{J_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},K_9} t_{J_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},L_{10}} t_{J_{12},K_9} \end{split}$$

$$+ \frac{1}{48} \sum_{I} \sum_{K} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{L} 0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, L_{10}} t_{J_{12}, K_{9}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{14},K_7,L_8)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},K_7}t_{J_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},K_7}t_{J_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},L_8}t_{J_{14},K_7}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},K_7}t_{J_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},K_7}t_{J_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},K_7}t_{J_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_8}t_{J_{14},K_7}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_8}t_{J_{14},K_7}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_8}t_{J_{14},K_7}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_8}t_{J_{14},K_7}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_8|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{14},K_9,L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_{14},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},K_9} t_{J_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{12},K_{10},L_9)\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_{12},L_9} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_{12},L_9} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},L_9}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},L_9}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},K_{10}}t_{J_{12},L_9} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_9}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_9}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_9}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_9}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle I_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_1,L_9}t_{J_{12},K_{10}} \\ &+ \frac{1}{48}\sum_{L}\sum_{L}\langle 1^I0^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{13},J_{14},K_{8},L_{7})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{14},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{14},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{7}}t_{J_{14},K_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{14},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{14},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{14},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{14},K_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{14},K_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{14},K_{10},L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},K_{10}} t_{J_{14},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},K_{10}} t_{J_{14},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{12},K_{10},L_{10})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K1^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K1^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{11},L_{10}}t_{J_{12},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{11},L_{10}}t_{J_{12},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K1^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{11},K_{10}}t_{J_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{11},K_{10}}t_{J_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_{12},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_{12},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_{12},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_{14}, K_8, L_8)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{14},L_{8}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{14},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{8}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{14},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{14},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{14},K_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{14},K_{10},L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 1^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},K_{10}} t_{J_{14},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 1^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},K_{10}} t_{J_{14},L_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{11}, K_9, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{11},L_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{11},L_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{9}}t_{J_{11},K_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{11},K_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{11},K_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{11},K_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{11},K_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{11},K_{9}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 1^{L$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{13},J_{13},K_{7},L_{7})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{13},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{13},L_{7}} \end{split}$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{7}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{7}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{13},L_{7}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{13},K_{7}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle I_{13}|$$

$$\langle (A_1, B_1) | \hat{H} | (A_1, B_1, I_{11}, J_{13}, K_9, L_7) \rangle =$$

$$+ \frac{1}{48} \sum_{\alpha} \sum_{\beta} \sum_{\alpha} \sum_{\beta} \langle 1^I 1^J | \hat{g} | 0^K 0^L \rangle \langle I_{11} | \hat{1}^+_{\alpha} | I_0 \rangle \langle J_{13} | \hat{1}^+_{\beta} | J_0 \rangle \langle K_9 | \hat{0}^-_{\alpha} | K_0 \rangle \langle L_7 | \hat{0}^-_{\beta} | L_0 \rangle t$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{13},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{13},L_{7}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{11}, K_9, L_{10})\rangle =$

 $+ \tfrac{1}{48} \sum \sum \sum \sum \langle 1^I 1^J | \hat{g} | 0^K 1^L \rangle \langle I_{11} | \hat{1}^+_\alpha | I_0 \rangle \langle J_{11} | \hat{1}^+_\alpha | J_0 \rangle \langle K_9 | \hat{0}^-_\alpha | K_0 \rangle \langle L_{10} | \hat{1}^-_\alpha | L_0 \rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_{11},L_{10}} t_{A_1,B_2} t_{A_1$ $+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{11},L_{10}}$ $+\frac{-1}{48}\sum_{r}^{I}\sum_{r}^{J}\sum_{\nu}^{K}\sum_{r}^{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{10}}t_{J_{11},K_{9}}t_{A_{1},B_{1}}t_{A_{1},B_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{1},A_{1},A_{1}}t_{A_{$ $+\frac{1}{48}\sum_{I}^{I}\sum_{K}^{J}\sum_{K}^{K}\sum_{I}^{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{10}}t_{J_{11},K_{9}}$ $+ \frac{1}{48} \sum_{I}^{\cdot} \sum_{J}^{\cdot} \sum_{K}^{\cdot} \sum_{L}^{\cdot} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, K_{9}} t_{J_{11}, L_{10}}$ $+\frac{-1}{48}\sum^{I}\sum^{J}\sum^{K}\sum^{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{11},L_{10}}$ $+\frac{-1}{48}\sum^{I}\sum^{J}\sum^{K}\sum^{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{11},K_{9}}$ $+\frac{1}{48}\sum_{r}^{I}\sum_{r}^{J}\sum_{r}^{K}\sum_{r}^{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{11},K_{9}}$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_{13}, K_7, L_8)\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{8}|\hat{1}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{13},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{8}|\hat{1}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{13},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{8}|\hat{1}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{8}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{8}|\hat{1}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{8}}t_{J_{13},K_{7}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{13},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{13},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{13},K_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{13},K_9,L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_{13},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},K_9} t_{J_{13},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{11},K_{10},L_9)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_{11},L_9}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_{11},L_9}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},L_9}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_{11},L_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},K_{10}}t_{J_{11},L_9}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_9}t_{J_{11},K_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_9}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_9}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_9}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_9}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{13},K_8,L_7)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},K_8}t_{J_{13},L_7}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},K_8}t_{J_{13},L_7}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},L_7}t_{J_{13},K_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},L_7}t_{J_{13},K_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},K_8}t_{J_{13},L_7}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},K_8}t_{J_{13},L_7}\\ &+\frac{-1}{48}\sum_{L}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle I_13|\hat{1}^+_{\beta}|I_0\rangle\langle I_13|\hat{1}^+_{\beta}|I_$$

$$+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{13},K_{8}}\\ +\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{13},K_{8}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{13},K_{10},L_7)\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle\langle L_7|\hat{0}_{\beta}^{-}|L_0\rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_{13},L_7}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle\langle L_7|\hat{0}_{\beta}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},K_{10}}t_{J_{13},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{11},K_{10},L_{10})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_{11},L_{10}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_{11},L_{10}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{11},L_{10}}t_{J_{11},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{11},L_{10}}t_{J_{11},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{11},K_{10}}t_{J_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_{11},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_{11},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_{11},K_{10}} \\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{13},J_{13},K_{8},L_{8})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{13},L_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{13},L_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{8}}t_{J_{13},K_{8}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{13},L_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{13},L_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{13},K_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{13},K_{8}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{13},K_{8}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{13}, K_{10}, L_8)\rangle =$$

$$+\frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{I} \langle 1^I 1^J |\hat{g}|1^K 1^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1, B_1} t_{I_{11}},$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{10}}t_{J_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{10}}t_{J_{13},L_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{14}, K_7, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{9}}t_{J_{14},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{14},K_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{14}, K_8, L_9)\rangle =$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{9}}t_{J_{14},K_{8}}\\+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{14},K_{8}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{14}, K_7, L_{10})\rangle =$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{14},K_{7}}\\+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{14},K_{7}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{14}, K_8, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{14},K_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{13}, K_7, L_9)\rangle =$$

$$+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{12},L_{9}} t_{J_{13},K_{7}} dt_{A_{1},B_{1}} t_{A_{1},B_{1}} t_{A_{1},B_{1},B_{1}} t_{A_{1},B_{1}} t_{A_{1},B_{1}} t_{A_{1},B_{1}} t_{A_{1},B_{1},B_{1}} t_{A_{1},B_{1},B_{1}} t_{A_{1},B_{1},B_{1},B_{1}} t_{A_{1},B_{1},B_{1},B_{1},B_{1}} t_{A_{1},B_{1},B_{1},B_{1},B_{1},B_{1},B_{1}} t_{A_{1},B_{1$$

$$+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12}, L_{9}} t_{J_{13}, K_{7}} dt_{A_{1}} dt_{A_{1}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{13}, K_8, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{9}}t_{J_{13},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{13},K_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{13}, K_7, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{13},K_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{13}, K_8, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{13},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{13},K_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{14}, K_7, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{9}}t_{J_{14},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{14},K_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{14}, K_8, L_9)\rangle =$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{9}}t_{J_{14},K_{8}}\\+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{14},K_{8}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{14}, K_7, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{10}}t_{J_{14},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{14},K_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{14}, K_8, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{10}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{14},K_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{13}, K_7, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{9}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{13},K_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{13}, K_8, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{9}}t_{J_{13},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{13},K_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{13}, K_7, L_{10})\rangle =$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{10}}t_{J_{13},K_{7}}\\+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{13},K_{7}}\\$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{13}, K_8, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{10}}t_{J_{13},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{13},K_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_{12},L_9)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{9}}t_{K_{12},L_{9}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{9}}t_{K_{12},L_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{9}}t_{J_{9},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}t_{K_{12},L_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}t_{K_{12},L_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}t_{K_{12},L_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}t_{K_{12},L_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{9}}t_{J_{9},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}0^{L}|\hat{g}|0^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_7,K_{14},L_7)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|0^J0^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},J_7}t_{K_{14},L_7} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L0^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},J_7}t_{K_{14},L_7} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|0^J0^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},L_7}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|0^J0^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},L_7}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|0^J0^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},J_7}t_{K_{14},L_7} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|0^J0^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},J_7}t_{K_{14},L_7} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|0^J0^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},L_7}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|0^J0^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},L_7}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|0^J0^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},L_7}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L0^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},L_7}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 0^I0^J|\hat{g}|0^L0^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_{14},L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_{14},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_{14},L_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_9, K_{12}, L_{10})\rangle =$$

$$+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K | \hat{g} | 0^J 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle \langle L_{10} | \hat{1}_{\alpha}^- | L_0 \rangle t_{A_1, B_1} t_{I_{12}, J_9} t_{K_{12}, L_{10}}$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{9}}t_{K_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{9},K_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}t_{K_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}t_{K_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{9},K_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{9},K_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{9},K_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{1}}\\ &+\frac{-1}{48}\sum_{L}\sum_{L}\langle 0^{L}0^{L}0^{L}0$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_7, K_{14}, L_8)\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{14},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{14},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{8}}t_{J_{7},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{14},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{14},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{7},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 0^{I}0^{K}|\hat{g}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_{14},L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_{14},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{10},K_{12},L_{9})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{12},L_{9}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{12},L_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{9}}t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{12},L_{9}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12},J_{10}} t_{K_{12},L_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12},J_{10}} t_{K_{12},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12},L_{9}} t_{J_{10},K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12},L_{9}} t_{J_{10},K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12},L_{9}} t_{J_{10},K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12},L_{9}} t_{J_{10},K_{12}} \\ &+ \frac{-1}{48} \sum_{L} \sum_{J} \sum_{L} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | 1^{J} | 0^{J} \rangle \langle I_{10} | \hat{0}_{\alpha}^{+} | 1^{J} | 0^{J} \rangle \langle I_{11} | 0^{J} | 0^{J} \rangle \langle$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_8, K_{14}, L_7)\rangle =$

$$\begin{split} & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle \langle L_{7} | \hat{0}^{-}_{\beta} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{14},J_{8}} t_{K_{14},L_{7}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle \langle L_{7} | \hat{0}^{-}_{\beta} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{14},J_{8}} t_{K_{14},L_{7}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle \langle L_{7} | \hat{0}^{-}_{\beta} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{14},L_{7}} t_{J_{8},K_{14}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle \langle L_{7} | \hat{0}^{-}_{\beta} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{14},L_{7}} t_{J_{8},K_{14}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle \langle L_{7} | \hat{0}^{-}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{8}} t_{K_{14},L_{7}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle \langle L_{7} | \hat{0}^{-}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{8}} t_{K_{14},L_{7}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle \langle L_{7} | \hat{0}^{-}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},L_{7}} t_{J_{8},K_{14}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle \langle L_{7} | \hat{0}^{-}_{\beta} | L_{0} \rangle t$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{10},K_{14},L_{7})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{14},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{14},L_{7}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{10},K_{12},L_{10})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{12},L_{10}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{10},K_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{10},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{12},L_{10}} \end{split}$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 1^{L} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12}, J_{10}} t_{K_{12}, L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{L} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12}, L_{10}} t_{J_{10}, K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 1^{L} 0^{K} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12}, L_{10}} t_{J_{10}, K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8,K_{14},L_8)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},J_8}t_{K_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^I1^J|\hat{g}|1^L0^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},J_8}t_{K_{14},L_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},L_8}t_{J_8,K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},J_8}t_{K_{14},L_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},J_8}t_{K_{14},L_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},L_8}t_{J_8,K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},L_8}t_{J_8,K_{14}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 0^I0^L|\hat{g}|1^L0^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle I_8|\hat{I}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_{14},L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}| \hat{1}_{\alpha}^- |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle \langle L_8 |\hat{1}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},J_{10}} t_{K_{14},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle \langle L_8 |\hat{1}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} t_{K_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_{11},L_9)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|0^J0^L\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{12},J_9}t_{K_{11},L_9}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{12},J_9}t_{K_{11},L_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|0^J0^L\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{12},L_9}t_{J_9,K_{11}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{12},L_9}t_{J_9,K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|0^J0^L\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},J_9}t_{K_{11},L_9}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},J_9}t_{K_{11},L_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},J_9}t_{K_{11},L_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|0^J0^L\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},J_9}t_{K_{11},L_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|0^J0^L\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_9}t_{J_9,K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|0^J0^L\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_9}t_{J_9,K_{11}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 0^I1^K|\hat{g}|0^J0^L\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle$$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{12} | \hat{0}^{+}_{\alpha} | I_{0} \rangle \langle J_{9} | \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{11} | \hat{1}^{+}_{\alpha} | K_{0} \rangle \langle L_{9} | \hat{0}^{-}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12}, L_{9}} t_{J_{9}, K_{11}} \rangle \langle I_{12} | \hat{0}^{+}_{\alpha} | I_{12} \rangle \langle I_{12} | I_{12} \rangle \langle I_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{7},K_{13},L_{7})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle \langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle \langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle \langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle \langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{13},L_{7}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle \langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle \langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle \langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle \langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{13},L_{7}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle \langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle \langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle \langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle \langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{7}}t_{J_{7},K_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle \langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle \langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle \langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle \langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{13},L_{7}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle \langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle \langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle \langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle \langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{13},L_{7}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle \langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle \langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle \langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle \langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{13},L_{7}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle \langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle \langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle \langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle \langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{J_{7},K_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle \langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle \langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle \langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle \langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{J_{7},K_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle \langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle \langle J_{7}|\hat{0}^{-}_{\beta}|J_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{9},K_{13},L_{7})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{9}}t_{K_{13},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}t_{K_{13},L_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_{11},L_{10})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^K|\hat{g}|0^J 1^L\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{12},J_9}t_{K_{11},L_{10}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^L 1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{12},J_9}t_{K_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^K|\hat{g}|0^J 1^L\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{12},L_{10}}t_{J_9,K_{11}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^L 1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{12},L_{10}}t_{J_9,K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^L 1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},J_9}t_{K_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^L 1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},J_9}t_{K_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^L 1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},J_9}t_{K_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^L 1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_{10}}t_{J_9,K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^L 1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_{10}}t_{J_9,K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^L 1^K\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_{10}}t_{J_9,K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^I 0^J|\hat{g}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{7},K_{13},L_{8})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{13},L_{8}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{13},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{8}}t_{J_{7},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{13},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{13},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{13},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{7},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{7},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_{13},L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_{13},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_{13},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_{11},L_9)\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|1^J0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{12},J_{10}}t_{K_{11},L_9} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^J|\hat{g}|0^L1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{12},J_{10}}t_{K_{11},L_9} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|1^J0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{12},L_9}t_{J_{10},K_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^J|\hat{g}|0^L1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{12},L_9}t_{J_{10},K_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^J|\hat{g}|0^L1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},J_{10}}t_{K_{11},L_9} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^J|\hat{g}|0^L1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},J_{10}}t_{K_{11},L_9} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^J|\hat{g}|0^L1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},J_{10}}t_{K_{11},L_9} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|1^J0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_9}t_{J_{10},K_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|1^J0^L\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_9}t_{J_{10},K_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|0^L1^K\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{12},L_9}t_{J_{10},K_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^I1^K|\hat{g}|0^L1^K\rangle\langle I_$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_8, K_{13}, L_7)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{8}}t_{K_{13},L_{7}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{8}}t_{K_{13},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{7}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{8}}t_{K_{13},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{8}}t_{K_{13},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{8}}t_{K_{13},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{2}}t_{K_{13},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_{13},L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta}|K_0 \rangle \langle L_7 |\hat{0}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{12},J_{10}} t_{K_{13},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta}|K_0 \rangle \langle L_7 |\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} t_{K_{13},L_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{10},K_{11},L_{10})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{11},L_{10}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{11},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{10},K_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{11},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{11},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{11},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{10},K_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{L}|\hat{g}|1^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{10},K_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{J}1^{L}|\hat{g}|1^{J}1^{L}|\hat{g}|1^{J}1^{L}|\hat{g}|1^{J}1^{L}|1^{L}|1^{L}|1^{L}|1^{L}|1^{L}|1^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8,K_{13},L_8)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},J_8}t_{K_{13},L_8} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^J|\hat{g}|1^L1^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},J_8}t_{K_{13},L_8} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{8}}t_{J_{8},K_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{8}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{8}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_{10}, K_{13}, L_8)\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{13},L_{8}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_9, K_{12}, L_9)\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{9}}t_{K_{12},L_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{9}}t_{K_{12},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{9}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{9}}t_{K_{12},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{9}}t_{K_{12},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{L$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_7, K_{14}, L_7)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{7}}t_{K_{14},L_{7}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{7}}t_{K_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{7}}t_{J_{7},K_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{7}}t_{J_{7},K_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{7}}t_{K_{14},L_{7}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{7}}t_{K_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{7},K_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{7},K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_9,K_{14},L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{11},J_9}t_{K_{14},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},J_9}t_{K_{14},L_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{11},J_{9},K_{12},L_{10})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{9}}t_{K_{12},L_{10}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{9}}t_{K_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{10}}t_{J_{9},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{9}}t_{K_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{9}}t_{K_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{9}}t_{K_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{9},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{9},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_7,K_{14},L_8)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},J_7}t_{K_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},J_7}t_{K_{14},L_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},L_8}t_{J_7,K_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},J_7}t_{K_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},J_7}t_{K_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},J_7}t_{K_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},J_7}t_{K_{14},L_8}\\ &+\frac{-1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 1^L0^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle I_1|\hat{0}^-_{\beta}|I_0\rangle\langle I_1|\hat{0}^-_{\beta}|I_0\rangle\langle I_1|\hat{0}^-_{\beta}|I$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{7},K_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{7},K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_9,K_{14},L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},J_9} t_{K_{14},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_9} t_{K_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_{12},L_9)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_{12},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},L_9} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},L_9} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},L_9} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},L_9} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},L_9} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{11}|\hat{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{13},J_{8},K_{14},L_{7})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{14},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{14},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{7}}t_{J_{8},K_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{14},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{14},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{14},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{8},K_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{8},K_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_{14},L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_{14},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_{14},L_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{11},J_{10},K_{12},L_{10})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{12},L_{10}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{10}}t_{J_{10},K_{12}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{10},K_{12}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{10},K_{12}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_8,K_{14},L_8)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|1^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},J_8}t_{K_{14},L_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},J_8}t_{K_{14},L_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|1^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},L_8}t_{J_8,K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},J_8}t_{K_{14},L_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|1^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},J_8}t_{K_{14},L_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},J_8}t_{K_{14},L_8}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_8}t_{J_8,K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_8}t_{J_8,K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_8}t_{J_8,K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_8}t_{J_8,K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^I1^J|\hat{g}|1^J1^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_8|\hat{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{11},J_{10},K_{14},L_{8})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{14},L_{8}} \\ &+ \frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{14},L_{8}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{11},J_{9},K_{11},L_{9})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{9}}t_{K_{11},L_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{9}}t_{K_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{9}}t_{J_{9},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{9}}t_{K_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{9}}t_{K_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{9}}t_{K_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{9},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{9}}t_{J_{9},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_7,K_{13},L_7)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J0^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},J_7}t_{K_{13},L_7} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},J_7}t_{K_{13},L_7} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J0^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},L_7}t_{J_7,K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},L_7}t_{J_7,K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J0^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},J_7}t_{K_{13},L_7} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_7}t_{J_7,K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^I0^J|\hat{g}|0^L1^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_$$

$$+ \frac{1}{48} \sum_{I} \sum_{K} \sum_{L} \langle 1^{I} 1^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{9}} t_{K_{13}, L_{7}} t_{A_{1}} t_{A_{1}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_9,K_{11},L_{10})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J1^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_0\rangle t_{A_1,B_1}t_{I_{11},J_9}t_{K_{11},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_0\rangle t_{A_1,B_1}t_{I_{11},J_9}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J1^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_0\rangle t_{A_1,B_1}t_{I_{11},L_{10}}t_{J_9,K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_0\rangle t_{A_1,B_1}t_{I_{11},L_{10}}t_{J_9,K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J1^L\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},J_9}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},J_9}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_9,K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_9,K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_9,K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},L_{10}}t_{J_9,K_{1$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_7, K_{13}, L_8)\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{7}}t_{K_{13},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{7}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{8}}t_{J_{7},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{7}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{7}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{7}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{7},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{7},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{7},K_{13}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 1^{L}1^{L}1^{K}|\hat{g}|0^{L}1^{L$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_9,K_{13},L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{11},J_9}t_{K_{13},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},J_9}t_{K_{13},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_{11},L_9)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \left\langle 1^I 1^K |\hat{g}| 1^J 0^L \right\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_{11},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}| 0^L 1^K \right\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_{11},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}| 1^J 0^L \right\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},L_9} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_{11},L_9} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_{11},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_{11},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},L_9} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}| 0^L 1^K \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},L_9} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}| 0^L 1^K \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_1,L_9} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{13},J_{8},K_{13},L_{7})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{13},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{13},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{7}}t_{J_{8},K_{13}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{13},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{13},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{13},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{8},K_{13}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{7}}t_{J_{8},K_{13}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{11},J_{10},K_{13},L_{7})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{13},L_{7}}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{13},L_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{10}, K_{11}, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{11},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{10}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{L}1^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{I_{11},L_{10}}t_{I_{11},L_{10}}\\$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_8, K_{13}, L_8)\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{13},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{8}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\sum_{L}\langle 1^{I}1^{L}1^{K}|\hat{g}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{11},J_{10},K_{13},L_{8})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{13},L_{8}} \\ &+ \frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{13},L_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_7,K_{14},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_9|\hat{0}^-_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_{12},L_9} t_{J_7,K_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_9|\hat{0}^-_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},L_9} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_8,K_{14},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},L_9} t_{J_8,K_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},L_9} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_7,K_{14},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},L_{10}} t_{J_7,K_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},L_{10}} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_8,K_{14},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 0^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},L_{10}} t_{J_8,K_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 0^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},L_{10}} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_7,K_{13},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{12},L_9} t_{J_7,K_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle \langle L_9|\hat{0}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},L_9} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_8,K_{13},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle \langle J_8|\hat{1}_{\beta}^-|J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle \langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1,B_1} t_{I_{12},L_9} t_{J_8,K_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle \langle J_8|\hat{1}_{\beta}^-|J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle \langle L_9|\hat{0}_{\alpha}^-|L_0\rangle t_{A_1} t_{B_1} t_{I_{12},L_9} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_7,K_{13},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_I \sum_J \sum_K \sum_L \langle 0^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{12}|\hat{0}^+_\alpha |I_0\rangle \langle J_7|\hat{0}^-_\beta |J_0\rangle \langle K_{13}|\hat{1}^+_\beta |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1,B_1} t_{I_{12},L_{10}} t_{J_7,K_{13}} \end{split}$$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 1^{L} 1^{K} \rangle \langle I_{12} | \hat{0}^{+}_{\alpha} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{13} | \hat{1}^{+}_{\beta} | K_{0} \rangle \langle L_{10} | \hat{1}^{-}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12}, L_{10}} t_{J_{7}, K_{13}} t_{A_{13}} t_{A_{13}} t_{A_{14}} t_{A_{15}, L_{15}} t_{A_{15}, L_{15}, L_{15}, L_{15}} t_{A_{15}, L_{15}, L_{15}, L_{15}} t_{A_{15}, L_{15}, L_{15}} t_{A_{15}, L_{15}, L_{15}, L_{15}} t_{A_{15}, L_{15}, L_{15}, L_{15}} t_{A_{15}, L_{15}, L_{15$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{12}, J_8, K_{13}, L_{10})\rangle =$$

$$+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},L_{10}}t_{J_{8},K_{13}}\\ +\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{10}}t_{J_{8},K_{13}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_7, K_{14}, L_9)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},L_{9}} t_{J_{7},K_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},L_{9}} t_{J_{7},K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_8, K_{14}, L_9)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle \langle L_{9} | \hat{0}^{-}_{\alpha} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},L_{9}} t_{J_{8},K_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle \langle L_{9} | \hat{0}^{-}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},L_{9}} t_{J_{8},K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_7, K_{14}, L_{10})\rangle =$$

$$\begin{split} & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{L} 0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},L_{10}} t_{J_{7},K_{14}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{L} 0^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},L_{10}} t_{J_{7},K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_8, K_{14}, L_{10})\rangle =$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},L_{10}}t_{J_{8},K_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}t_{J_{8},K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_7, K_{13}, L_9)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},L_{9}} t_{J_{7},K_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},L_{9}} t_{J_{7},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_8,K_{13},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{11},L_9} t_{J_8,K_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},L_9} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_7,K_{13},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{11},L_{10}} t_{J_7,K_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},L_{10}} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_8,K_{13},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{11},L_{10}} t_{J_8,K_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},L_{10}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_9,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_9|\hat{0}_{\alpha}^- |J_0 \rangle \langle K_9|\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_9|\hat{0}_{\alpha}^- |J_0 \rangle \langle K_9|\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_9|\hat{0}_{\alpha}^- |J_0 \rangle \langle K_9|\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{12},K_9} t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_9|\hat{0}_{\alpha}^- |J_0 \rangle \langle K_9|\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{12},K_9} t_{J_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_9|\hat{0}_{\alpha}^- |J_0 \rangle \langle K_9|\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_9|\hat{0}_{\alpha}^- |J_0 \rangle \langle K_9|\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_9|\hat{0}_{\alpha}^- |J_0 \rangle \langle K_9|\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_9|\hat{0}_{\alpha}^- |J_0 \rangle \langle K_9|\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_9|\hat{0}_{\alpha}^- |J_0 \rangle \langle K_9|\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_9,L_{12}} \\ &+ \frac{1}{48} \sum_{L} \sum_{L} \langle 0^I 0^K |\hat{g}|0^L 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_9|\hat{0}_{\alpha}^-$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{7},K_{7},L_{14})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{7},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{7},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{7},L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{7},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{7},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{7},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{7},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{7},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{J}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_7,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_7,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{9},K_{10},L_{12})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{9}}t_{K_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{9}}t_{K_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{10}}t_{J_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}t_{K_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}t_{J_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_7, K_8, L_{14})\rangle =$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{7},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{7},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{7},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{7},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{7},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{J}0^{J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_8,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 0^J 0^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle \langle L_{14} | \hat{0}_{\beta}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_8,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 0^J 0^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle \langle L_{14} | \hat{0}_{\beta}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{10},K_{9},L_{12})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{12}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{12}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{9}}t_{J_{10},L_{12}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{12}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{12}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{12}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{K}\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{12}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{12}} \\ &+ \frac{1}{48}\sum_{L}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{L}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle I_{12}|\hat{0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8,K_7,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{14} |\hat{0}^+_{\beta}| I_0 \rangle \langle J_8 |\hat{1}^-_{\beta}| J_0 \rangle \langle K_7 |\hat{0}^-_{\beta}| K_0 \rangle \langle L_{14} |\hat{0}^+_{\beta}| L_0 \rangle t_{A_1,B_1} t_{I_{14},J_8} t_{K_7,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 0^K 0^L \rangle \langle I_{14} |\hat{0}^+_{\beta}| I_0 \rangle \langle J_8 |\hat{1}^-_{\beta}| J_0 \rangle \langle K_7 |\hat{0}^-_{\beta}| K_0 \rangle \langle L_{14} |\hat{0}^+_{\beta}| L_0 \rangle t_{A_1,B_1} t_{I_{14},J_8} t_{K_7,L_{14}} \end{split}$$

 $+\frac{-1}{48}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{10},L_{12}}$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{8}}t_{K_{7},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle\langle L_{14}|\hat{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_7,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},J_{10}} t_{K_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} t_{K_7,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_{10},L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0 \rangle \langle L_{12} |\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{12},J_{10}} t_{K_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0 \rangle \langle L_{12} |\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{12},J_{10}} t_{K_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0 \rangle \langle L_{12} |\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0 \rangle \langle L_{12} |\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0 \rangle \langle L_{12} |\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} t_{K_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0 \rangle \langle L_{12} |\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} t_{K_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0 \rangle \langle L_{12} |\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0 \rangle \langle L_{12} |\hat{0}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0 \rangle \langle L_{12} |\hat{0}_{\alpha$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{8},K_{8},L_{14})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{8}}t_{K_{8},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{8}}t_{K_{8},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{8},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{8},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{8},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{8},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{8},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{8}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{8}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{8},L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_8,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle \langle L_{14} |\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},J_{10}} t_{K_8,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle \langle L_{14} |\hat{0}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} t_{K_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{9},K_{9},L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{9}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{9}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{9}}t_{J_{9},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|0^{K}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{9}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|0^{K}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{9}|\hat{0}_{\alpha}^{-}|J_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_7,K_7,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},J_7} t_{K_7,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},J_7} t_{K_7,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},K_7} t_{J_7,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},K_7} t_{J_7,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},J_7} t_{K_7,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},J_7} t_{K_7,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},J_7} t_{K_7,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},J_7} t_{K_7,L_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{7},L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{7},L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_7,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K | \hat{g} | 0^J 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_7 | \hat{0}_{\beta}^- | K_0 \rangle \langle L_{13} | \hat{1}_{\beta}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_7,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K | \hat{g} | 0^J 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_7 | \hat{0}_{\beta}^- | K_0 \rangle \langle L_{13} | \hat{1}_{\beta}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_7,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_{10},L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 0^J 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle \langle L_{11} | \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J | \hat{g} | 1^K 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle \langle L_{11} | \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 0^J 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle \langle L_{11} | \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J | \hat{g} | 1^K 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle \langle L_{11} | \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 0^J 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle \langle L_{11} | \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J | \hat{g} | 1^K 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle \langle L_{11} | \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J | \hat{g} | 1^K 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle \langle L_{11} | \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J | \hat{g} | 1^K 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle \langle L_{11} | \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 0^I 0^J | \hat{g} | 1^K 1^L \rangle \langle I_{12} | \hat{0}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{10} | \hat{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{7},K_{8},L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle \langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{8},L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle \langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{8},L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle \langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{7},L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle \langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{7},L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle \langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{8},L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle \langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{8},L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle \langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{7},L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle \langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{7},L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle \langle K_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_9,K_8,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{12},J_9} t_{K_8,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{12},J_9} t_{K_8,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{12},J_{10},K_{9},L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},K_{9}}t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},J_{10}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle \langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{9}}t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle \langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle \langle J_{10}|\hat$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8,K_7,L_{13})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},J_8}t_{K_7,L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^I1^J|\hat{g}|0^K1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},J_8}t_{K_7,L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},K_7}t_{J_8,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},K_7}t_{J_8,L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},J_8}t_{K_7,L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},J_8}t_{K_7,L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},K_7}t_{J_8,L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle I_14|\hat{0}^+_{\beta}|I_0\rangle\langle I_14|\hat{0}^+_{\beta}|I_0\rangle\langle I$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_7,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},J_{10}} t_{K_7,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} t_{K_7,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_{10},L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},J_{10}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},J_{10}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},J_{10}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_{10},L_{11}} \\ &+ \frac{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8,K_8,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^- |J_0 \rangle \langle K_8 |\hat{1}_{\beta}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{14},J_8} t_{K_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^- |J_0 \rangle \langle K_8 |\hat{1}_{\beta}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{14},J_8} t_{K_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^- |J_0 \rangle \langle K_8 |\hat{1}_{\beta}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{14},K_8} t_{J_8,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^- |J_0 \rangle \langle K_8 |\hat{1}_{\beta}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{14},K_8} t_{J_8,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^- |J_0 \rangle \langle K_8 |\hat{1}_{\beta}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},J_8} t_{K_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^- |J_0 \rangle \langle K_8 |\hat{1}_{\beta}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},J_8} t_{K_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^- |J_0 \rangle \langle K_8 |\hat{1}_{\beta}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},K_8} t_{J_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^- |J_0 \rangle \langle K_8 |\hat{1}_{\beta}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},K_8} t_{J_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^- |J_0 \rangle \langle K_8 |\hat{1}_{\beta}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_14,K_8} t_{J_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 0^I 1^K |\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_{10},K_8,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_I \sum_J \sum_K \sum_L \langle 0^I 1^K |\hat{g}|1^J 1^L \rangle \langle I_{12}|\hat{0}^+_\alpha |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_8|\hat{1}^-_\beta |K_0\rangle \langle L_{13}|\hat{1}^+_\beta |L_0\rangle t_{A_1,B_1} t_{I_{12},J_{10}} t_{K_8,L_{13}} \end{split}$$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{K} | \hat{g} | 1^{J} 1^{L} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{10} | \hat{1}_{\alpha}^{-} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{12}, J_{10}} t_{K_{8}, L_{13}} t_{A_{1}} t_{A_{1}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_9,K_9,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},J_9} t_{K_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},J_9} t_{K_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_9} t_{K_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_9} t_{K_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_9} t_{K_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},K_9} t_{J_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},K_9} t_{J_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^-$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{13},J_{7},K_{7},L_{14})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{7}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{7}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{7},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{7}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{7}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_9,K_7,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{11},J_9} t_{K_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_9} t_{K_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_9} t_{K_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_9} t_{K_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_9} t_{K_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_9} t_{K_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle I_0|\hat{0}^-_{\alpha}|J_0\rangle \langle I_1|\hat{0}^-_{\beta}|K_0\rangle \langle I_1|\hat{0}^+_{\beta}|L_0\rangle t_{A_1} t_{A_1}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_9,K_{10},L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1}t_{I_{11},J_9}t_{K_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1}t_{I_{11},J_9}t_{K_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1}t_{I_{11},K_{10}}t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1}t_{B_1}t_{I_{11},J_9}t_{K_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1}t_{B_1}t_{I_{11},J_9}t_{K_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1}t_{B_1}t_{I_{11},K_{10}}t_{J_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1}t_{B_1}t_{I_{11},K_{10}}t_{J_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1}t_{B_1}t_{I_{11},K_{10}}t_{J_9,L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_0|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_7,K_8,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{13},J_7} t_{K_8,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{13},J_7} t_{K_8,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{13},K_8} t_{J_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{13},K_8} t_{J_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},J_7} t_{K_8,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},J_7} t_{K_8,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},K_8} t_{J_7,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},K_8} t_{J_7,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},K_8} t_{J_7,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_9,K_8,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{11},J_9}t_{K_8,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{11},J_9}t_{K_8,L_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_{10}, K_9, L_{12})\rangle =$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{10},L_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 1^{I}1^{L$$

 $\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{13},J_{8},K_{7},L_{14})\rangle =$ $+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle \langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{7},L_{14}}$ $+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle \langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{7},L_{14}}$ $+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle \langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{8},L_{14}}$ $+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle \langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{7},L_{14}}$ $+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle \langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{7},L_{14}}$ $+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle \langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{7},L_{14}}$ $+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle \langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{7},L_{14}}$

 $+\frac{1}{48}\sum^{I}\sum^{J}\sum^{K}\sum^{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{8},L_{14}}$

 $+\frac{-1}{48}\sum_{\mathbf{r}}^{I}\sum_{\mathbf{r}}^{K}\sum_{\mathbf{r}}^{K}\sum_{\mathbf{r}}^{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{14}|\hat{0}^{+}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{8},L_{14}}t_{A_{1}}t_{A_$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_7,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_7,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_{10},L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_{10}|\hat{1}^-_\alpha |K_0\rangle \langle L_{12}|\hat{0}^+_\alpha |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^K 0^L \rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_{10}|\hat{1}^-_\alpha |K_0\rangle \langle L_{12}|\hat{0}^+_\alpha |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_{10},L_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{10}}t_{J_{10},L_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{10}}t_{J_{10},L_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{10}}t_{J_{10},L_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{10}}t_{J_{10},L_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{10}}t_{J_{10},L_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{10}}t_{J_{10},L_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle L_{11$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_8, K_8, L_{14})\rangle =$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 1^{I}1^{L}1^{L}1^{L}1^{L$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_8,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^I 1^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_8,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^I 1^K |\hat{g}|1^J 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{11},J_{9},K_{9},L_{11})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{9}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{9}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{9},L_{11}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{9},L_{11}} \end{split}$$

$$\begin{split} & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{9}} t_{K_{9}, L_{11}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, J_{9}} t_{K_{9}, L_{11}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, K_{9}} t_{J_{9}, L_{11}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, K_{9}} t_{J_{9}, L_{11}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, K_{9}} t_{J_{9}, L_{11}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, K_{9}} t_{J_{9}, L_{11}} \\ & + \frac{-1}{48} \sum_{L} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, K_{9}} t_{J_{9}, L_{11}} \\ & + \frac{-1}{48} \sum_{L} \sum_{J} \sum_{L} \sum_{L} \langle 1^{J} 0^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{11} | \hat{I}_{\alpha}^{+} | I_{0} \rangle \langle I_{11} | \hat{I}_{\alpha}^{+} | I_{0} \rangle \langle I_{11} | \hat{I}_{\alpha}^{+} | I_{0}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_7, K_7, L_{13})\rangle =$$

$$\begin{split} & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K} | \hat{g} | 0^{J}1^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{13},J_{7}} t_{K_{7},L_{13}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{J} | \hat{g} | 0^{K}1^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{13},J_{7}} t_{K_{7},L_{13}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K} | \hat{g} | 0^{J}1^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{13},K_{7}} t_{J_{7},L_{13}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{J} | \hat{g} | 0^{K}1^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{13},K_{7}} t_{K_{7},L_{13}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K} | \hat{g} | 0^{J}1^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{13},J_{7}} t_{K_{7},L_{13}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K} | \hat{g} | 0^{K}1^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{13},K_{7}} t_{J_{7},L_{13}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K} | \hat{g} | 0^{K}1^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{13},K_{7}} t_{J_{7},L_{13}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K} | \hat{g} | 0^{K}1^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_9, K_7, L_{13})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},J_{9}} t_{K_{7},L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},J_{9}} t_{K_{7},L_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_9, K_{10}, L_{11})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{K} | \hat{g} | 0^{J} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},J_{9}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},J_{9}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{K} | \hat{g} | 0^{J} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},K_{10}} t_{J_{9},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},J_{9}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},J_{9}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},J_{9}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},J_{9}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{10}}t_{J_{9},L_{11}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{10}}t_{J_{9},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_9,K_8,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{11},J_9} t_{K_8,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_9} t_{K_8,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_9,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 1^J 1^L \rangle \langle I_{11}| \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- | J_0 \rangle \langle K_9| \hat{0}_{\alpha}^- | K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J | \hat{g} | 0^K 1^L \rangle \langle I_{11}| \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- | J_0 \rangle \langle K_9| \hat{0}_{\alpha}^- | K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 1^J 1^L \rangle \langle I_{11}| \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- | J_0 \rangle \langle K_9| \hat{0}_{\alpha}^- | K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J | \hat{g} | 0^K 1^L \rangle \langle I_{11}| \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- | J_0 \rangle \langle K_9| \hat{0}_{\alpha}^- | K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 1^J 1^L \rangle \langle I_{11}| \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- | J_0 \rangle \langle K_9| \hat{0}_{\alpha}^- | K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 1^J 1^L \rangle \langle I_{11}| \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- | J_0 \rangle \langle K_9| \hat{0}_{\alpha}^- | K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 1^J 1^L \rangle \langle I_{11}| \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- | J_0 \rangle \langle K_9| \hat{0}_{\alpha}^- | K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{11},K_9} t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 1^J 1^L \rangle \langle I_{11}| \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- | J_0 \rangle \langle K_9| \hat{0}_{\alpha}^- | K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{11},K_9} t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 1^I 0^K | \hat{g} | 1^J 1^L \rangle \langle I_{11}| \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{10}| \hat{1}_{\alpha}^- | J_0 \rangle \langle K_9| \hat{0}_{\alpha}^- | K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_8,K_7,L_{13})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{8},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{13},K_{7}}t_{A_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_7,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^K |\hat{g}| \mathbf{1}^J \mathbf{1}^L \rangle \langle I_{11} |\hat{\mathbf{1}}_{\alpha}^+ |I_0\rangle \langle J_{10} |\hat{\mathbf{1}}_{\alpha}^- |J_0\rangle \langle K_7 |\hat{\mathbf{0}}_{\beta}^- |K_0\rangle \langle L_{13} |\hat{\mathbf{1}}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_7,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^K |\hat{g}| \mathbf{1}^J \mathbf{1}^L \rangle \langle I_{11} |\hat{\mathbf{1}}_{\alpha}^+ |I_0\rangle \langle J_{10} |\hat{\mathbf{1}}_{\alpha}^- |J_0\rangle \langle K_7 |\hat{\mathbf{0}}_{\beta}^- |K_0\rangle \langle L_{13} |\hat{\mathbf{1}}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_7,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{11},J_{10},K_{10},L_{11})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{10}}t_{J_{10},L_{11}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},J_{10}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},J_{10}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{10}}t_{J_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{10}}t_{J_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{10}}t_{J_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{13},J_{8},K_{8},L_{13})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{8},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{13},$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_{10},K_8,L_{13}) \rangle = \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{1}^K | \hat{g} | \mathbf{1}^J \mathbf{1}^L \rangle \langle I_{11} | \hat{\mathbf{1}}_{\alpha}^+ | I_0 \rangle \langle J_{10} | \hat{\mathbf{1}}_{\alpha}^- | J_0 \rangle \langle K_8 | \hat{\mathbf{1}}_{\beta}^- | K_0 \rangle \langle L_{13} | \hat{\mathbf{1}}_{\beta}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{11},J_{10}} t_{K_8,L_{13}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{1}^K | \hat{g} | \mathbf{1}^J \mathbf{1}^L \rangle \langle I_{11} | \hat{\mathbf{1}}_{\alpha}^+ | I_0 \rangle \langle J_{10} | \hat{\mathbf{1}}_{\alpha}^- | J_0 \rangle \langle K_8 | \hat{\mathbf{1}}_{\beta}^- | K_0 \rangle \langle L_{13} | \hat{\mathbf{1}}_{\beta}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{11},J_{10}} t_{K_8,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_7,K_9,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle \langle J_7|\hat{0}_{\beta}^-|J_0\rangle \langle K_9|\hat{0}_{\alpha}^-|K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+|L_0\rangle t_{A_1,B_1} t_{I_{12},K_9} t_{J_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle \langle J_7|\hat{0}_{\beta}^-|J_0\rangle \langle K_9|\hat{0}_{\alpha}^-|K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+|L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_7,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_8,K_9,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},K_9} t_{J_8,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_7,K_{10},L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_7,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_8,K_{10},L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_8,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_7,K_9,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{12},K_9} t_{J_7,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_7,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_8,K_9,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle \langle J_8|\hat{1}_{\beta}^-|J_0\rangle \langle K_9|\hat{0}_{\alpha}^-|K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1,B_1} t_{I_{12},K_9} t_{J_8,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle \langle J_8|\hat{1}_{\beta}^-|J_0\rangle \langle K_9|\hat{0}_{\alpha}^-|K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_9} t_{J_8,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_7,K_{10},L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_7,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_7,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{12},J_8,K_{10},L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{12},K_{10}} t_{J_8,L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{12},K_{10}} t_{J_8,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{11},J_7,K_9,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{11},K_9} t_{J_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{L} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{A_1,B_2} t_{A_1,B_2} t_{A_1,B_2} \\ &+ \frac{-1}{48} \sum_{L} \sum_{L} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle I_1|\hat{0}_{\beta}^- |I_0\rangle \langle I_1|\hat{0}_{\beta}^-$$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 0^{L} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle \langle L_{14} | \hat{0}^{+}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11}, K_{9}} t_{J_{7}, L_{14}} dt_{A_{1}} t_{A_{1}} t_{A_{1}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_8, K_9, L_{14})\rangle =$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{8},L_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_7, K_{10}, L_{14})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},K_{10}} t_{J_{7},L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},K_{10}} t_{J_{7},L_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_8, K_{10}, L_{14})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},K_{10}} t_{J_{8},L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},K_{10}} t_{J_{8},L_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_7, K_9, L_{13})\rangle =$$

$$+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{11},K_{9}}t_{J_{7},L_{13}}\\ +\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{7},L_{13}}\\ +\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{7},L_{13}}\\ +\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{7},L_{13}}\\ +\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{9}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{9}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},K_{9}}t_{J_{7},L_{13}}\\ +\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{9}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{9}\rangle t_{A_{1}}t_{B_{1}}t_{A_{1}}t_$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_8, K_9, L_{13})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},K_{9}} t_{J_{8},L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},K_{9}} t_{J_{8},L_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_7, K_{10}, L_{13})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},K_{10}} t_{J_{7},L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},K_{10}} t_{J_{7},L_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{11}, J_8, K_{10}, L_{13})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{11},K_{10}} t_{J_{8},L_{13}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{11},K_{10}} t_{J_{8},L_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{12}, K_9, L_7)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{9}|\hat{0}^{-}_{\alpha}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{7}}t_{J_{12},K_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{9}|\hat{0}^{-}_{\alpha}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{J_{12},K_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{12}, K_9, L_8)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{9}|\hat{0}^{-}_{\alpha}|K_{0}\rangle\langle L_{8}|\hat{1}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{8}}t_{J_{12},K_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{9}|\hat{0}^{-}_{\alpha}|K_{0}\rangle\langle L_{8}|\hat{1}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{12},K_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{12}, K_{10}, L_7)\rangle =$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{7}}t_{J_{12},K_{10}}\\+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle\langle L_{7}|\hat{0}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{7}}t_{J_{12},K_{10}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{12}, K_{10}, L_8)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle\langle L_{8}|\hat{1}^{-}_{\beta}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},L_{8}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle\langle L_{8}|\hat{1}^{-}_{\beta}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},L_{8}}t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{12},K_9,L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_9|\hat{0}^-_{\alpha} |K_0\rangle \langle L_7|\hat{0}^-_{\beta} |L_0\rangle t_{A_1,B_1} t_{I_{13},L_7} t_{J_{12},K_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_9|\hat{0}^-_{\alpha} |K_0\rangle \langle L_7|\hat{0}^-_{\beta} |L_0\rangle t_{A_1} t_{B_1} t_{I_{13},L_7} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{12},K_9,L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_9|\hat{0}^-_{\alpha} |K_0\rangle \langle L_8|\hat{1}^-_{\beta} |L_0\rangle t_{A_1,B_1} t_{I_{13},L_8} t_{J_{12},K_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_9|\hat{0}^-_{\alpha} |K_0\rangle \langle L_8|\hat{1}^-_{\beta} |L_0\rangle t_{A_1} t_{B_1} t_{I_{13},L_8} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{12},K_{10},L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{13},L_7} t_{J_{12},K_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},L_7} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{12},K_{10},L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha} |K_0\rangle \langle L_8|\hat{1}^-_{\beta} |L_0\rangle t_{A_1,B_1} t_{I_{13},L_8} t_{J_{12},K_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha} |K_0\rangle \langle L_8|\hat{1}^-_{\beta} |L_0\rangle t_{A_1} t_{B_1} t_{I_{13},L_8} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{11},K_9,L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},L_7} t_{J_{11},K_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},L_7} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{11},K_9,L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{14},L_8} t_{J_{11},K_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{14},L_8} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{11},K_{10},L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},L_7} t_{J_{11},K_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},L_7} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{11},K_{10},L_8)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{14},L_8} t_{J_{11},K_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{14},L_8} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{11},K_9,L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{13},L_7} t_{J_{11},K_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},L_7} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{11},K_9,L_8)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},L_8}t_{J_{11},K_9}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L0^K\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_8}t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{11},K_{10},L_7)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{13},L_7} t_{J_{11},K_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},L_7} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{13},J_{11},K_{10},L_{8})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},L_{8}}t_{J_{11},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},L_{8}}t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{12},K_7,L_9)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{14},K_7} t_{J_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{14},K_7} t_{J_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{12},K_8,L_9)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_8|\hat{1}^-_{\beta} |K_0\rangle \langle L_9|\hat{0}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_{14},K_8} t_{J_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_8|\hat{1}^-_{\beta} |K_0\rangle \langle L_9|\hat{0}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_{14},K_8} t_{J_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{12},K_7,L_{10})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_{14},K_7} t_{J_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},K_7} t_{J_{12},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{12},K_8,L_{10})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_8|\hat{1}^-_{\beta} |K_0\rangle \langle L_{10}|\hat{1}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_{14},K_8} t_{J_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_8|\hat{1}^-_{\beta} |K_0\rangle \langle L_{10}|\hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_{14},K_8} t_{J_{12},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{12},K_7,L_9)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{13},K_7} t_{J_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},K_7} t_{J_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{12},K_8,L_9)\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K0^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{13},K_8}t_{J_{12},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{L}\langle 1^I0^J|\hat{g}|1^K0^L\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{A_1,B_2}t_{A_1,B_2} \\ &+\frac{1}{48}\sum_{L}\sum_{L}\langle 1^I0^J|\hat{g}|1^L\langle 1^I0^J|$$

$$+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{12} | \hat{0}^{+}_{\alpha} | J_{0} \rangle \langle K_{8} | \hat{1}^{-}_{\beta} | K_{0} \rangle \langle L_{9} | \hat{0}^{-}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{13}, K_{8}} t_{J_{12}, L_{9}} t_{A_{1}} t_{B_{1}} t_{A_{1}} t_$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_{12}, K_7, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{12}|\hat{0}^{+}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{12},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_{12}, K_8, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{12},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{11}, K_7, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{11}, K_8, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{9}|\hat{0}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{9}|\hat{0}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{11}, K_7, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{7}}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{7}}t_{J_{11},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_{11}, K_8, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},K_{8}}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},K_{8}}t_{J_{11},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_{11}, K_7, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_{11}, K_8, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_{11}, K_7, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{7}}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{7}}t_{J_{11},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_{11}, K_8, L_{10})\rangle =$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},K_{8}}t_{J_{11},L_{10}}\\+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{11}|\hat{1}^{+}_{\alpha}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},K_{8}}t_{J_{11},L_{10}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{12}, K_{12}, L_9)\rangle =$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{12},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{12},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{12},L_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{12},L_{9}} \end{split}$$

$$\begin{split} & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9}, J_{12}} t_{K_{12}, L_{9}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9}, J_{12}} t_{K_{12}, L_{9}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9}, K_{12}} t_{J_{12}, L_{9}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9}, K_{12}} t_{J_{12}, L_{9}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{14}, K_{14}, L_7)\rangle =$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{14},L_{7}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{I_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 0^{I}0^{J}0^{L}|\hat{g$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{12},K_{14},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_9,J_{12}} t_{K_{14},L_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_9,J_{12}} t_{K_{14},L_7} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{12}, K_{12}, L_{10})\rangle =$ $+\frac{-1}{48}\sum \sum \sum \sum \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_9|\hat{0}_{\alpha}^-|J_{\alpha}|^2 \langle I_{\beta}|\hat{0}_{\alpha}^-|J_{\alpha}|^2 \langle I_{\beta}|\hat{0}_{\alpha}|J_{\alpha}|^2 \langle I_{\beta}|\hat{0}_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha}|J_{\alpha$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{12},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{12},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{12},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle\langle I_{11}|\hat{1}_{\alpha}^{-}|L_{0}\rangle\langle I_{11}|\hat{1}_{\alpha}^{-}|L_{0}\rangle\langle I_{11}|\hat{1}_{\alpha}^{-}|L_{$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{12},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{12},L_{10}} \end{split}$$

$$\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{14},K_{14},L_8)\rangle = \\ + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,J_{14}} t_{K_{14},L_8} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,J_{14}} t_{K_{14},L_8} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,K_{14}} t_{J_{14},L_8} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,K_{14}} t_{J_{14},L_8} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,J_{14}} t_{K_{14},L_8} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,J_{14}} t_{K_{14},L_8} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{14}} t_{J_{14},L_8} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{14}} t_{J_{14},L_8} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{14}} t_{J_{14},L_8} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_7 |\hat{0}_{\beta$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{12},K_{14},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_9,J_{12}} t_{K_{14},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_9,J_{12}} t_{K_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_{12},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 0^J 0^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12}| \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_{12}| \hat{0}_{\alpha}^+ | K_0 \rangle \langle L_9| \hat{0}_{\alpha}^- | L_0 \rangle t_{A_1,B_1} t_{I_{10},J_{12}} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J | \hat{g} | 0^K 0^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12}| \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_{12}| \hat{0}_{\alpha}^+ | K_0 \rangle \langle L_9| \hat{0}_{\alpha}^- | L_0 \rangle t_{A_1,B_1} t_{I_{10},J_{12}} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 0^J 0^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12}| \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_{12}| \hat{0}_{\alpha}^+ | K_0 \rangle \langle L_9| \hat{0}_{\alpha}^- | L_0 \rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_{12},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J | \hat{g} | 0^K 0^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12}| \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_{12}| \hat{0}_{\alpha}^+ | K_0 \rangle \langle L_9| \hat{0}_{\alpha}^- | L_0 \rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 0^J 0^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12}| \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_{12}| \hat{0}_{\alpha}^+ | K_0 \rangle \langle L_9| \hat{0}_{\alpha}^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},J_{12}} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J | \hat{g} | 0^K 0^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12}| \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_{12}| \hat{0}_{\alpha}^+ | K_0 \rangle \langle L_9| \hat{0}_{\alpha}^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},J_{12}} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 0^J 0^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12}| \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_{12}| \hat{0}_{\alpha}^+ | K_0 \rangle \langle L_9| \hat{0}_{\alpha}^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 0^J 0^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12}| \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_{12}| \hat{0}_{\alpha}^+ | K_0 \rangle \langle L_9| \hat{0}_{\alpha}^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J | \hat{g} | 0^K 0^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12}| \hat{0}_{\alpha}^+ | J_0 \rangle \langle K_{12}| \hat{0}_{\alpha}^+ | J_0 \rangle \langle L_9| \hat{0}_{\alpha$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{14},K_{14},L_{7})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_{14},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{10},J_{12}} t_{K_{14},L_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},J_{12}} t_{K_{14},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_{12},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{10},J_{12}} t_{K_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{10},J_{12}} t_{K_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},J_{12}} t_{K_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},J_{12}} t_{K_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{10}|\hat{1}_{\alpha}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{L$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{14},K_{14},L_8)\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{14},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{14},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{14},L_{8}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{14},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{14},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{14},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{14},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{14},L_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{A_{14}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_{14},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^K | \hat{g} | \mathbf{0}^J \mathbf{1}^L \rangle \langle I_{10} | \hat{\mathbf{1}}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{\mathbf{0}}_{\alpha}^+ | J_0 \rangle \langle K_{14} | \hat{\mathbf{0}}_{\beta}^+ | K_0 \rangle \langle L_8 | \hat{\mathbf{1}}_{\beta}^- | L_0 \rangle t_{A_1,B_1} t_{I_{10},J_{12}} t_{K_{14},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^K | \hat{g} | \mathbf{0}^J \mathbf{1}^L \rangle \langle I_{10} | \hat{\mathbf{1}}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{\mathbf{0}}_{\alpha}^+ | J_0 \rangle \langle K_{14} | \hat{\mathbf{0}}_{\beta}^+ | K_0 \rangle \langle L_8 | \hat{\mathbf{1}}_{\beta}^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},J_{12}} t_{K_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{12},K_{11},L_9)\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^K|\hat{g}|0^J 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1,B_1}t_{I_9,J_{12}}t_{K_{11},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^K 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1,B_1}t_{I_9,J_{12}}t_{K_{11},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^K|\hat{g}|0^J 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1,B_1}t_{I_9,K_{11}}t_{J_{12},L_9} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^K 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1,B_1}t_{I_9,K_{11}}t_{J_{12},L_9} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^K|\hat{g}|0^J 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1}t_{B_1}t_{I_9,J_{12}}t_{K_{11},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^K 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1}t_{B_1}t_{I_9,J_{12}}t_{K_{11},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^K|\hat{g}|0^J 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1}t_{B_1}t_{I_9,K_{11}}t_{J_{12},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^K|\hat{g}|0^J 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1}t_{B_1}t_{I_9,K_{11}}t_{J_{12},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 1^K|\hat{g}|0^J 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1}t_{B_1}t_{I_9,K_{11}}t_{J_{12},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I 0^J|\hat{g}|1^K 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1}t_{B_1}t_{I_9,K_{11}}t_{J_{12},L_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^I 0^J|\hat{g}|1^K 0^L\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle I_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{11}|\hat{1}_\alpha^+|K_0\rangle\langle L_9|\hat{0}_\alpha^-|L_0\rangle t_{A_1}t_{B_1}t_{I_9,K_{11}}t_{J_{12},L_9} \\ &+\frac{1$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{14}, K_{13}, L_7)\rangle =$$

$$+ \frac{-1}{48} \sum_{I} \sum_{I} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 0^J 0^L \rangle \langle I_7 | \hat{0}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle \langle L_7 | \hat{0}_{\beta}^- | L_0 \rangle t_{A_1, B_1} t_{I_7, J_{14}} t_{K_{13}, L_7}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{13},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{13}}t_{J_{14},L_{7}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{13},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{13},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{14},L_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{A_{14},L_{7}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 0^{L}0^{L}0^{L}0^{L}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{12},K_{13},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_9|\hat{0}_\alpha^- |I_0\rangle \langle J_{12}|\hat{0}_\alpha^+ |J_0\rangle \langle K_{13}|\hat{1}_\beta^+ |K_0\rangle \langle L_7|\hat{0}_\beta^- |L_0\rangle t_{A_1,B_1} t_{I_9,J_{12}} t_{K_{13},L_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_9|\hat{0}_\alpha^- |I_0\rangle \langle J_{12}|\hat{0}_\alpha^+ |J_0\rangle \langle K_{13}|\hat{1}_\beta^+ |K_0\rangle \langle L_7|\hat{0}_\beta^- |L_0\rangle t_{A_1} t_{B_1} t_{I_9,J_{12}} t_{K_{13},L_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{12},K_{11},L_{10})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{12},L_{10}} \\ &+\frac{1}{48}\sum_{L}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{J}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{14},K_{13},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,J_{14}} t_{K_{13},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|1^K 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,J_{14}} t_{K_{13},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,K_{13}} t_{J_{14},L_8} \end{split}$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{13}}t_{J_{14},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{14},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{14},L_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{12},K_{13},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 0^J 1^L \rangle \langle I_9 | \hat{0}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle \langle K_{13} | \hat{1}_\beta^+ | K_0 \rangle \langle L_8 | \hat{1}_\beta^- | L_0 \rangle t_{A_1,B_1} t_{I_9,J_{12}} t_{K_{13},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 0^J 1^L \rangle \langle I_9 | \hat{0}_\alpha^- | I_0 \rangle \langle J_{12} | \hat{0}_\alpha^+ | J_0 \rangle \langle K_{13} | \hat{1}_\beta^+ | K_0 \rangle \langle L_8 | \hat{1}_\beta^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_9,J_{12}} t_{K_{13},L_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{12},K_{11},L_{9})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{12}}t_{K_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{12}}t_{K_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{12},L_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{12},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}}t_{K_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}}t_{K_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{12},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{12},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{12}|$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{14},K_{13},L_{7})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{13},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{13},L_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{13}}t_{J_{14},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{13}}t_{J_{14},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{13},L_{7}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{13},L_{7}}t_{A_{14}}t_{A_{14},L_{7}}t_{A_{14}}t_{A_{14},L_{7}}t_{A_{14}}t_{A_{14},L_{7},L_{7}}t_{A_{14},L_{7},L_{7}}t_{A_{14},L_{7},L_{7}}t_{A_{14},L_{7},L_{7}}t_{A_{14},L_{7},L_{7}}t_{A_{14},L_{7},L_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{12},K_{13},L_{7})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{12}}t_{K_{13},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}}t_{K_{13},L_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_{11},L_{10})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{12}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{12}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{10},K_{11}}t_{J_{12},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1,B_1}t_{I_{10},K_{11}}t_{J_{12},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{12}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{12}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{10}|\hat{1}_{\alpha}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},K_{11}}t_{J_{12},L_{10}}\\ &+\frac{1}{48}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{14},K_{13},L_{8})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{S}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{13},L_{8}}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{13},L_{8}}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{13}}t_{J_{14},L_{8}}\\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{13},L_{8}}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{13},L_{8}}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{13},L_{8}}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{13},L_{8}}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{13}}t_{J_{14},L_{8}}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{13},L_$$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{8} | \hat{1}_{\beta}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8}, K_{13}} t_{J_{14}, L_{8}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_{13},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{1}^K |\hat{g}| \mathbf{0}^J \mathbf{1}^L \rangle \langle I_{10}|\hat{\mathbf{1}}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{\mathbf{0}}_{\alpha}^+ |J_0\rangle \langle K_{13}|\hat{\mathbf{1}}_{\beta}^+ |K_0\rangle \langle L_8|\hat{\mathbf{1}}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{10},J_{12}} t_{K_{13},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{1}^K |\hat{g}| \mathbf{0}^J \mathbf{1}^L \rangle \langle I_{10}|\hat{\mathbf{1}}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{\mathbf{0}}_{\alpha}^+ |J_0\rangle \langle K_{13}|\hat{\mathbf{1}}_{\beta}^+ |K_0\rangle \langle L_8|\hat{\mathbf{1}}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},J_{12}} t_{K_{13},L_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{11},K_{12},L_{9})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{12},L_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{12},L_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{11},L_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{12},L_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{12},L_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{12},L_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{11},L_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{11},L_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{L}0^{L}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{7},J_{13},K_{14},L_{7})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{13},L_{7}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{14},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{13},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{13},L_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{11},K_{14},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_9,J_{11}} t_{K_{14},L_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_9,J_{11}} t_{K_{14},L_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{11},K_{12},L_{10})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{11},L_{10}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{11},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{12},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{11},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{11},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}1^{J}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{13},K_{14},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}_\beta^- |I_0 \rangle \langle J_{13}| \hat{1}_\beta^+ |J_0 \rangle \langle K_{14}| \hat{0}_\beta^+ |K_0 \rangle \langle L_8 |\hat{1}_\beta^- |L_0 \rangle t_{A_1,B_1} t_{I_7,J_{13}} t_{K_{14},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 0^K 1^L \rangle \langle I_7 |\hat{0}_\beta^- |I_0 \rangle \langle J_{13}| \hat{1}_\beta^+ |J_0 \rangle \langle K_{14}| \hat{0}_\beta^+ |K_0 \rangle \langle L_8 |\hat{1}_\beta^- |L_0 \rangle t_{A_1,B_1} t_{I_7,J_{13}} t_{K_{14},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}_\beta^- |I_0 \rangle \langle J_{13}| \hat{1}_\beta^+ |J_0 \rangle \langle K_{14}| \hat{0}_\beta^+ |K_0 \rangle \langle L_8 |\hat{1}_\beta^- |L_0 \rangle t_{A_1,B_1} t_{I_7,K_{14}} t_{J_{13},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}_\beta^- |I_0 \rangle \langle J_{13}| \hat{1}_\beta^+ |J_0 \rangle \langle K_{14}| \hat{0}_\beta^+ |K_0 \rangle \langle L_8 |\hat{1}_\beta^- |L_0 \rangle t_{A_1,B_1} t_{I_7,K_{14}} t_{J_{13},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}_\beta^- |I_0 \rangle \langle J_{13}| \hat{1}_\beta^+ |J_0 \rangle \langle K_{14}| \hat{0}_\beta^+ |K_0 \rangle \langle L_8 |\hat{1}_\beta^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,J_{13}} t_{K_{14},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}_\beta^- |I_0 \rangle \langle J_{13}| \hat{1}_\beta^+ |J_0 \rangle \langle K_{14}| \hat{0}_\beta^+ |K_0 \rangle \langle L_8 |\hat{1}_\beta^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,J_{13}} t_{K_{14},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}_\beta^- |I_0 \rangle \langle J_{13}| \hat{1}_\beta^+ |J_0 \rangle \langle K_{14}| \hat{0}_\beta^+ |K_0 \rangle \langle L_8 |\hat{1}_\beta^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{14}} t_{J_{13},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}_\beta^- |I_0 \rangle \langle J_{13}| \hat{1}_\beta^+ |J_0 \rangle \langle K_{14}| \hat{0}_\beta^+ |K_0 \rangle \langle L_8 |\hat{1}_\beta^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{14}} t_{J_{13},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}_\beta^- |I_0 \rangle \langle J_{13}| \hat{1}_\beta^+ |J_0 \rangle \langle K_{14}| \hat{0}_\beta^+ |K_0 \rangle \langle L_8 |\hat{1}_\beta^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{14}} t_{J_{13},L_8} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}_\beta^- |I_0 \rangle \langle J_{13}| \hat{1}_\beta^+ |J_0 \rangle \langle K_{14$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{11}, K_{14}, L_8)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{8} | \hat{1}_{\beta}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{9},J_{11}} t_{K_{14},L_{8}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{8} | \hat{1}_{\beta}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9},J_{11}} t_{K_{14},L_{8}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_{11}, K_{12}, L_9)\rangle =$ $+ \frac{-1}{48} \sum \sum \sum \sum \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}, B_{1}} t_{I_{10}, J_{11}} t_{K_{12}, L_{9}}$ $+\frac{1}{48}\sum^{I}\sum^{J}\sum^{K}\sum^{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{12},L_{9}}$ $+\frac{1}{48}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\sum_{I}^{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{12}}t_{J_{11},L_{9}}$
$$\begin{split} &+\frac{-1}{48}\sum_{I}^{J}\sum_{J}^{K}\sum_{K}^{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{12}}t_{J_{11},L_{9}}\\ &+\frac{-1}{48}\sum_{I}^{J}\sum_{J}\sum_{K}^{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{12},L_{9}}\\ &+\frac{1}{48}\sum_{I}^{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{12},L_{9}} \end{split}$$
 $+\frac{1}{48}\sum^{I}\sum^{J}\sum^{K}\sum^{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{12}}t_{J_{11},L_{9}}$ $+\frac{-1}{48}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{12}}t_{J_{11},L_{9}}$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{13}, K_{14}, L_7)\rangle =$

 $+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},J_{13}} t_{K_{14},L_{7}}$ $+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}}t_{K_{14},L_{7}}$ $+\frac{1}{48}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\sum_{I}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}t_{I_{8},K_{14}$ $+\frac{-1}{48}\sum^{I}\sum^{J}\sum^{K}\sum^{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}$ $+\frac{-1}{48}\sum^{I}\sum^{J}\sum^{K}\sum^{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{14},L_{7}}t_{A_{1}}t_{A_{$ $+\frac{1}{48}\sum^{I}\sum^{J}\sum^{K}\sum^{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{14},L_{7}}$ $+\frac{1}{48}\sum^{I}\sum^{J}\sum^{K}\sum^{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{13},L_{7}}$ $+ \frac{-1}{48} \sum_{i}^{I} \sum_{j}^{K} \sum_{k}^{K} \sum_{i}^{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8}, K_{14}} t_{J_{13}, L_{7}} t_{A_{1}} t_{A_$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_{11}, K_{14}, L_7)\rangle =$ $+ \frac{-1}{48} \sum \sum \sum \sum \langle 1^I 0^K | \hat{g} | 1^J 0^L \rangle \langle I_{10} | \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle \langle K_{14} | \hat{0}^+_{\beta} | K_0 \rangle \langle L_7 | \hat{0}^-_{\beta} | L_0 \rangle t_{A_1, B_1} t_{I_{10}, J_{11}} t_{K_{14}, L_7} \rangle dt_{A_1, B_2} t_{A_1, B_2} t_{A_2, A_2} dt_{A_2, A_2, A_2, A_2} dt_{A_2, A_2,$ $+\frac{-1}{48}\sum_{i}^{J}\sum_{i}^{K}\sum_{i}^{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{14},L_{7}}t_{A_{1}}t_{A_{$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11},K_{12},L_{10})\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{10},J_{11}}t_{K_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{10},J_{11}}t_{K_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{10},K_{12}}t_{J_{11},L_{10}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1,B_1}t_{I_{10},K_{12}}t_{J_{11},L_{10}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{10},J_{11}}t_{K_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{10},J_{11}}t_{K_{12},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{10},K_{12}}t_{J_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{10},K_{12}}t_{J_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_1}t_{B_1}t_{I_{10},K_{12}}t_{J_{11},L_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 1^I0^K|\hat{g}|0^K1^L\rangle\langle I_{10}|$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{13},K_{14},L_{8})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}}t_{K_{14},L_{8}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{13},L_{8}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{13},L_{8}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}}t_{K_{14},L_{8}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{14},L_{8}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{14},L_{8}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{13},L_{8}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle \langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{13},L_{8}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 1^{I}1^{J}0^{L}|\hat{g}|0^{K}1^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11},K_{14},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^K | \hat{g} | \mathbf{1}^J \mathbf{1}^L \rangle \langle I_{10} | \hat{\mathbf{1}}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{\mathbf{1}}_{\alpha}^+ | J_0 \rangle \langle K_{14} | \hat{\mathbf{0}}_{\beta}^+ | K_0 \rangle \langle L_8 | \hat{\mathbf{1}}_{\beta}^- | L_0 \rangle t_{A_1,B_1} t_{I_{10},J_{11}} t_{K_{14},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^K | \hat{g} | \mathbf{1}^J \mathbf{1}^L \rangle \langle I_{10} | \hat{\mathbf{1}}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{\mathbf{1}}_{\alpha}^+ | J_0 \rangle \langle K_{14} | \hat{\mathbf{0}}_{\beta}^+ | K_0 \rangle \langle L_8 | \hat{\mathbf{1}}_{\beta}^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},J_{11}} t_{K_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{11},K_{11},L_{9})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{11},L_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle \langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{11},L_{9}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle \langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle \langle I_{11}|\hat{1}_{\alpha}^{+}|J_{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{13},K_{13},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0 \rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,J_{13}} t_{K_{13},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0 \rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,J_{13}} t_{K_{13},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0 \rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,K_{13}} t_{J_{13},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0 \rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_7,K_{13}} t_{J_{13},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0 \rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,J_{13}} t_{K_{13},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0 \rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,J_{13}} t_{K_{13},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0 \rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{13}} t_{J_{13},L_7} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0 \rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{13}} t_{J_{13},L_7} \\ &+ \frac{1}{48} \sum_{L} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0 \rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{13}} t_{J_13,L_7} \\ &+ \frac{1}{48} \sum_{L} \sum_{L} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{11},K_{13},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_9 |\hat{0}_\alpha^- |I_0\rangle \langle J_{11}|\hat{1}_\alpha^+ |J_0\rangle \langle K_{13}|\hat{1}_\beta^+ |K_0\rangle \langle L_7 |\hat{0}_\beta^- |L_0\rangle t_{A_1,B_1} t_{I_9,J_{11}} t_{K_{13},L_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 0^L \rangle \langle I_9 |\hat{0}_\alpha^- |I_0\rangle \langle J_{11}|\hat{1}_\alpha^+ |J_0\rangle \langle K_{13}|\hat{1}_\beta^+ |K_0\rangle \langle L_7 |\hat{0}_\beta^- |L_0\rangle t_{A_1} t_{B_1} t_{I_9,J_{11}} t_{K_{13},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{11},K_{11},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_I \sum_J \sum_K \sum_L \langle 0^I 1^K |\hat{g}|1^J 1^L \rangle \langle I_9|\hat{0}^-_\alpha |I_0\rangle \langle J_{11}|\hat{1}^+_\alpha |J_0\rangle \langle K_{11}|\hat{1}^+_\alpha |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1,B_1} t_{I_9,J_{11}} t_{K_{11},L_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{11},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{11},L_{10}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 0^{L}1^{L}|\hat{g}|1^$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{13}, K_{13}, L_8)\rangle =$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{13}}t_{J_{13},L_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{13},L_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{A_{13},L_{8}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 0^{L}1^{L}1^{L}|\hat{g$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{11},K_{13},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0 \rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_9,J_{11}} t_{K_{13},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0 \rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_9,J_{11}} t_{K_{13},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11},K_{11},L_9)\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J0^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}}t_{K_{11},L_9}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}}t_{K_{11},L_9}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J0^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},K_{11}}t_{J_{11},L_9} \end{split}$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{11},L_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{11},L_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{11},L_{9}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{13}, K_{13}, L_7)\rangle =$

$$\begin{split} & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},J_{13}} t_{K_{13},L_{7}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},J_{13}} t_{K_{13},L_{7}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},K_{13}} t_{J_{13},L_{7}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},K_{13}} t_{J_{13},L_{7}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} t_{K_{13},L_{7}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},K_{13}} t_{J_{13},L_{7}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},K_{13}} t_{J_{13},L_{7}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{7} | \hat{0}_{\beta}^{-} | L_{0} \rangle$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{11},K_{13},L_{7})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle \langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{13},L_{7}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle \langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{13},L_{7}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{11},K_{11},L_{10})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{11},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{11},L_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{11},L_{10}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{11},L_{10}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{11},L_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{11},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{11},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{13},K_{13},L_8)\rangle = \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J1^L\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_8|\hat{1}_{\beta}^-|L_0\rangle t_{A_1,B_1}t_{I_8,J_{13}}t_{K_{13},L_8} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_8|\hat{1}_{\beta}^-|L_0\rangle t_{A_1,B_1}t_{I_8,J_{13}}t_{K_{13},L_8} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J1^L\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_8|\hat{1}_{\beta}^-|L_0\rangle t_{A_1,B_1}t_{I_8,K_{13}}t_{J_{13},L_8} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_8|\hat{1}_{\beta}^-|L_0\rangle t_{A_1,B_1}t_{I_8,K_{13}}t_{J_{13},L_8} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_8|\hat{1}_{\beta}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_8,J_{13}}t_{K_{13},L_8} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_8|\hat{1}_{\beta}^-|L_0\rangle t_{A_1}t_{B_1}t_{I_8,K_{13}}t_{J_{13},L_8} \\ &+\frac{1}{48}\sum_{L}\sum_{J}\sum_{L}\sum_{L}\langle 1^I1^J|\hat{g}|1^L|\hat{g}|1^L|\hat{g}|1^L|\hat{g}|1^L|\hat{g}|1^L|\hat{g}|1^L|1^L|\hat{g}|1^L|1^L|1^L|1^L|1^L|$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11},K_{13},L_8)\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}}t_{K_{13},L_8}\\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{11}}t_{K_{13},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{12},K_{14},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_7 |\hat{0}_{\beta}^-|I_0 \rangle \langle J_{12} |\hat{0}_{\alpha}^+|J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+|K_0 \rangle \langle L_9 |\hat{0}_{\alpha}^-|L_0 \rangle t_{A_1,B_1} t_{I_7,K_{14}} t_{J_{12},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_7 |\hat{0}_{\beta}^-|I_0 \rangle \langle J_{12} |\hat{0}_{\alpha}^+|J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+|K_0 \rangle \langle L_9 |\hat{0}_{\alpha}^-|L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{14}} t_{J_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{12},K_{14},L_9)\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K0^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_8,K_{14}}t_{J_{12},L_9}\\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K0^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,K_{14}}t_{J_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{12},K_{14},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_7,K_{14}} t_{J_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{14}} t_{J_{12},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{12},K_{14},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 0^K 1^L \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{14} |\hat{0}^+_{\beta} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_8,K_{14}} t_{J_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 0^K 1^L \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{14} |\hat{0}^+_{\beta} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_8,K_{14}} t_{J_{12},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{12},K_{13},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle \langle L_9 |\hat{0}^-_{\alpha} |L_0 \rangle t_{A_1,B_1} t_{I_7,K_{13}} t_{J_{12},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle \langle L_9 |\hat{0}^-_{\alpha} |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{13}} t_{J_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{12},K_{13},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^J | \hat{g} | \mathbf{1}^K \mathbf{0}^L \rangle \langle I_8 | \hat{\mathbf{1}}_{\beta}^- | I_0 \rangle \langle J_{12} | \hat{\mathbf{0}}_{\alpha}^+ | J_0 \rangle \langle K_{13} | \hat{\mathbf{1}}_{\beta}^+ | K_0 \rangle \langle L_9 | \hat{\mathbf{0}}_{\alpha}^- | L_0 \rangle t_{A_1,B_1} t_{I_8,K_{13}} t_{J_{12},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^J | \hat{g} | \mathbf{1}^K \mathbf{0}^L \rangle \langle I_8 | \hat{\mathbf{1}}_{\beta}^- | I_0 \rangle \langle J_{12} | \hat{\mathbf{0}}_{\alpha}^+ | J_0 \rangle \langle K_{13} | \hat{\mathbf{1}}_{\beta}^+ | K_0 \rangle \langle L_9 | \hat{\mathbf{0}}_{\alpha}^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_8,K_{13}} t_{J_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{12},K_{13},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_7,K_{13}} t_{J_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,K_{13}} t_{J_{12},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{12},K_{13},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_I \sum_J \sum_K \sum_L \langle 1^I 0^J |\hat{g}|1^K 1^L \rangle \langle I_8|\hat{1}^-_\beta |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_{13}|\hat{1}^+_\beta |K_0\rangle \langle L_{10}|\hat{1}^-_\alpha |L_0\rangle t_{A_1,B_1} t_{I_8,K_{13}} t_{J_{12},L_{10}} \end{split}$$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{K} 1^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8}, K_{13}} t_{J_{12}, L_{10}} \rangle dt_{A_{1}} dt_{A_{1}} t_{A_{1}} t_{A_$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{11}, K_{14}, L_9)\rangle =$$

$$+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{11},L_{9}}\\ +\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{11},L_{9}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{11}, K_{14}, L_9)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},K_{14}} t_{J_{11},L_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},K_{14}} t_{J_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{11}, K_{14}, L_{10})\rangle =$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{11},L_{10}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{10}|\hat{1}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{11},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{11}, K_{14}, L_{10})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},K_{14}} t_{J_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},K_{14}} t_{J_{11},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{11}, K_{13}, L_9)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 1^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{7},K_{13}} t_{J_{11},L_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},K_{13}} t_{J_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{11}, K_{13}, L_9)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},K_{13}} t_{J_{11},L_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{K} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},K_{13}} t_{J_{11},L_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{11},K_{13},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{11}| \hat{1}^+_{\alpha} |J_0\rangle \langle K_{13}| \hat{1}^+_{\beta} |K_0\rangle \langle L_{10}| \hat{1}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_7,K_{13}} t_{J_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{11}| \hat{1}^+_{\alpha} |J_0\rangle \langle K_{13}| \hat{1}^+_{\beta} |K_0\rangle \langle L_{10}| \hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,K_{13}} t_{J_{11},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{11},K_{13},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle \langle K_{13}|\hat{1}^+_{\beta} |K_0\rangle \langle L_{10}|\hat{1}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_8,K_{13}} t_{J_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle \langle K_{13}|\hat{1}^+_{\beta} |K_0\rangle \langle L_{10}|\hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_8,K_{13}} t_{J_{11},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{12},K_9,L_{12})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{12}}t_{J_{12},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{12}}t_{J_{12},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{K_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{12},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{12},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},L_{12}}t_{I_{12}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{14},K_7,L_{14})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|0^J0^L\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_7,J_{14}}t_{K_7,L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L0^K\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_7,J_{14}}t_{K_7,L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|0^J0^L\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_7,L_{14}}t_{J_{14},K_7} \end{split}$$

$$\begin{split} & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{7},L_{14}} t_{J_{14},K_{7}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},J_{14}} t_{K_{7},L_{14}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},J_{14}} t_{K_{7},L_{14}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},L_{14}} t_{J_{14},K_{7}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},L_{14}} t_{J_{14},K_{7}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},L_{14}} t_{J_{14},K_{7}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},L_{14}} t_{J_{14},K_{7}} \\ & + \frac{-1}{48} \sum_{L} \sum_{L} \langle 0^{L} 0^{L} 0^{L} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle I_{7} | \hat{0}_{\beta}^$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{12},K_{7},L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{7},L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{12},K_{10},L_{12})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{10},L_{12}} + \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{12}}t_{J_{12},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{12},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{12},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{J}1^{K}|\hat{g}|0^{J}0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{7},J_{14},K_{8},L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{8},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{8},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{14},K_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{14},K_{8}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{8},L_{14}} \end{split}$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{14},K_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{14},K_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{12},K_8,L_{14})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|0^J0^L\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_9,J_{12}}t_{K_8,L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^K|\hat{g}|0^J0^L\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_9,J_{12}}t_{K_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_9,L_{12})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J0^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{12}}t_{K_9,L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{12}}t_{K_9,L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J0^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{12}}t_{J_{12},K_9} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^L0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{12}}t_{J_{12},K_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J0^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{12}}t_{K_9,L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J0^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{12}}t_{K_9,L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J0^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{12}}t_{K_9,L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J0^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{12}}t_{J_{12},K_9} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J0^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{12}}t_{J_{12},K_9} \\ &+\frac{1}{48}\sum_{L}\sum_{J}\sum_{L}\langle 1^I0^J|\hat{g}|0^L0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{12}}t_{J_{12},K_9} \\ &+\frac{1}{48}\sum_{L}\sum_{J}\sum_{L}\langle 1^I0^J|\hat{g}|0^L0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{14},K_{7},L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{14},K_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_$$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{7} | \hat{0}_{\beta}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8}, L_{14}} t_{J_{14}, K_{7}} t_{A_{1}} t$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_7,L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J0^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_7|\hat{0}_{\beta}^-|K_0\rangle\langle L_{14}|\hat{0}_{\beta}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{12}}t_{K_7,L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^K|\hat{g}|0^J0^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_7|\hat{0}_{\beta}^-|K_0\rangle\langle L_{14}|\hat{0}_{\beta}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{12}}t_{K_7,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{12},K_{10},L_{12})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{12}}t_{K_{10},L_{12}} + \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{12}}t_{K_{10},L_{12}} + \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{12}}t_{J_{12},K_{10}} + \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{12}}t_{J_{12},K_{10}} + \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}}t_{K_{10},L_{12}} + \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}}t_{K_{10},L_{12}} + \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{12}}t_{J_{12},K_{10}} + \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{12}}t_{J_{12},K_{10}} + \frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{14},K_{8},L_{14})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{8},L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{8},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{14},K_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{8},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{8},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{8},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{14},K_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{14},K_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_8,L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},J_{12}} t_{K_8,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},J_{12}} t_{K_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{12},K_{9},L_{11})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{9},L_{11}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{11}}t_{J_{12},K_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{9},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{12},K_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{12},K_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{14},K_7,L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{7},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{13}}t_{J_{14},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{14},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{14},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{14},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{12}, K_7, L_{13})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{7},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{7},L_{13}} \end{split}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{12}, K_{10}, L_{11})\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{10},L_{11}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{11}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{12},K_{10}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\langle 0^{$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{14}, K_8, L_{13})\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{8},L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{8},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{13}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{8},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{8},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{8},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{14},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{J}1^{K}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{12}, K_8, L_{13})\rangle =$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{12}}t_{K_{8},L_{13}}$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{12}}t_{K_{8},L_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_9,L_{11})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{12}}t_{K_{9},L_{11}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{12}}t_{K_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{11}}t_{J_{12},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}}t_{K_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}}t_{K_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{12}}t_{K_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{11}}t_{J_{12},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{11}}t_{J_{12},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{14},K_{7},L_{13})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{13}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{13}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{13}}t_{J_{14},K_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{13}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{7},L_{13}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{14},K_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{14},K_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{14},K_{7}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_7,L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{10},J_{12}} t_{K_7,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{10},J_{12}} t_{K_7,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_{10},L_{11})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J1^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{12}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{12}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J1^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{11}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{11}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|0^J1^L\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{12}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{12}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{12}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{11}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{11}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{11}}t_{J_{12},K_{10}}\\ &+\frac{1}{48}\sum_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{14},K_{8},L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{8},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{13}}t_{J_{14},K_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{8},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{14},K_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{14},K_{8}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{12},K_8,L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},J_{12}} t_{K_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},J_{12}} t_{K_8,L_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{11}, K_9, L_{12})\rangle =$$

$$+\frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K | \hat{g} | 1^J 0^L \rangle \langle I_9 | \hat{0}_{\alpha}^- | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_9 | \hat{0}_{\alpha}^- | K_0 \rangle \langle L_{12} | \hat{0}_{\alpha}^+ | L_0 \rangle t_{A_1, B_1} t_{I_9, J_{11}} t_{K_9, L_{12}}$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{9},L_{12}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{12}}t_{J_{11},K_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{12}}t_{J_{11},K_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{11},K_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{11},K_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{11},K_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{11},K_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{2}}\\ &+\frac{-1}{48}\sum_{L}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{13}, K_7, L_{14})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{7},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{7},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{7},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{7},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{7},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{L}0^{L$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{11}, K_7, L_{14})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{7},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{7},L_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{11}, K_{10}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{10},L_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{12}}t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{9},L_{12}} t_{J_{11},K_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9},J_{11}} t_{K_{10},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9},J_{11}} t_{K_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9},L_{12}} t_{J_{11},K_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9},L_{12}} t_{J_{11},K_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9},L_{12}} t_{J_{11},K_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9},L_{12}} t_{J_{11},K_{10}} \\ &+ \frac{-1}{48} \sum_{L} \sum_{J} \sum_{L} \sum_{L} \langle 0^{J} 1^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle I_{11} | \hat{I}_{\alpha}^{+} | I_{0} \rangle \langle K_{10} | \hat{I}_{\alpha}^{-} | I_{0} \rangle \langle I_{11} |$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{13}, K_8, L_{14})\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\right\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{8},L_{14}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{8},L_{14}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{13},K_{8}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{8},L_{14}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{8},L_{14}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{8},L_{14}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{13},K_{8}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{13},K_{8}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{11},K_{8},L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{8},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{8},L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{11},K_{9},L_{12})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{9},L_{12}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{9},L_{12}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{12}}t_{J_{11},K_{9}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{12}}t_{J_{11},K_{9}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{9},L_{12}} \end{split}$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10}, J_{11}} t_{K_{9}, L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10}, L_{12}} t_{J_{11}, K_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10}, L_{12}} t_{J_{11}, K_{9}} \end{split}$$

 $\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{13},K_{7},L_{14})\rangle =$ $+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}}t_{K_{7},L_{14}}$ $+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}}t_{K_{7},L_{14}}$ $+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{13},K_{7}}$ $+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{13},K_{7}}$ $+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{7},L_{14}}$ $+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{7},L_{14}}$ $+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle \langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle \langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{7},L_{14}}$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11},K_7,L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},J_{11}} t_{K_7,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},J_{11}} t_{K_7,L_{14}} \end{split}$$

 $+\frac{1}{48}\sum^{I}\sum^{J}\sum^{K}\sum^{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{13},K_{7}}$

 $+\frac{-1}{48}\sum_{\mathbf{r}}^{I}\sum_{\mathbf{r}}^{K}\sum_{\mathbf{r}}^{K}\sum_{\mathbf{r}}^{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{13},K_{7}}$

 $\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{11},K_{10},L_{12})\rangle = \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle \langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{10},L_{12}} \\ + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle \langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{10},L_{12}} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle \langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{12}}t_{J_{11},K_{10}} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle \langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{10},L_{12}} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle \langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{10},L_{12}} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle \langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{10},L_{12}} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle \langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{10},L_{12}} \\ + \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle \langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle \langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle \langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{12}} \\ + \frac{1}{48} \sum_{L} \sum_{L} \sum_{L} \langle 1^{L}1^{L}1^{L}|\hat{g}|1^{L}1^{L}1^{L}|\hat{g}|1^{L}1^{L}1^{L}1^{L}1$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10}, L_{12}} t_{J_{11}, K_{10}} t_{A_{10}, L_{10}} t_{A_{10}, L_{10}} t_{A_{10}, L_{10}, L_{10}} t_{A_{10}, L_{10}, L_{10}} t_{A_{10}, L_{10}, L_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{13},K_8,L_{14})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J0^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,J_{13}}t_{K_8,L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,J_{13}}t_{K_8,L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J0^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,L_{14}}t_{J_{13},K_8} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,L_{14}}t_{J_{13},K_8} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J0^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,J_{13}}t_{K_8,L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,J_{13}}t_{K_8,L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,J_{13}}t_{K_8,L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J0^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,L_{14}}t_{J_{13},K_8} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J0^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,L_{14}}t_{J_{13},K_8} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,L_{14}}t_{J_{13},K_8} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{14}|\hat$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11},K_8,L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J0^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle\langle L_{14}|\hat{0}_{\beta}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}}t_{K_8,L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J0^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle\langle L_{14}|\hat{0}_{\beta}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{11}}t_{K_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{11},K_{9},L_{11})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{9},L_{11}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{11}}t_{J_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{I_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{I_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{I_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{13},K_7,L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{7},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{13}}t_{J_{13},K_{7}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{I_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{I_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{I_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{11},K_7,L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_9,J_{11}} t_{K_7,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_9,J_{11}} t_{K_7,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{11},K_{10},L_{11})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{10},L_{11}} + \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{10},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{11}}t_{J_{11},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{10},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{10},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{10},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{11},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{11},K_{10}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}1^{J}1^{K}|\hat{g}|1^{J}1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{13}, K_8, L_{13})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{8},L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{8},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{13}}t_{J_{13},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{8},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{8},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{8},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{13},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{13},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{13},K_{8}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{L$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{11},K_{8},L_{13})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},J_{11}}t_{K_{8},L_{13}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},J_{11}}t_{K_{8},L_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{11},K_{9},L_{11})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{9},L_{11}} + \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{11}}t_{J_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{11}}t_{J_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{11}}t_{J_{11},K_{9}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{11}}t_{J_{11},K_{9}} \\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 1^{L}0^{K}|\hat{g}|1^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{13},K_{7},L_{13})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}}t_{K_{7},L_{13}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}}t_{K_{7},L_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{13}}t_{J_{13},K_{7}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{13}}t_{J_{13},K_{7}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{7},L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{13},K_{7}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{13},K_{7}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{A_{1}}\\ &+\frac{-1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 1^{L}1^{L}0^{L}|\hat{g}|1^{L}0^{L}\rangle\langle I_{8$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11},K_7,L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},J_{11}} t_{K_7,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},J_{11}} t_{K_7,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{11},K_{10},L_{11})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}}t_{K_{10},L_{11}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},J_{11}}t_{K_{10},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{11}}t_{J_{11},K_{10}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{11}}t_{J_{11},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{11}}t_{K_{10},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{11}}t_{K_{10},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},J_{11}}t_{K_{10},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{11}}t_{J_{11},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{11}}t_{J_{11},K_{10}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^J1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_1}t_{J_11,K_{10}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{13},K_8,L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^I1^K|\hat{g}|1^J1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,J_{13}}t_{K_8,L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,J_{13}}t_{K_8,L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^I1^K|\hat{g}|1^J1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,L_{13}}t_{J_{13},K_8}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,L_{13}}t_{J_{13},K_8} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{8},L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{8},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{13},K_{8}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{13},K_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_{11}, K_8, L_{13})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},J_{11}}t_{K_{8},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},J_{11}}t_{K_{8},L_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{12}, K_9, L_{14})\rangle =$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{12},K_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{12},K_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{12}, K_9, L_{14})\rangle =$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{12},K_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{12},K_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{12}, K_{10}, L_{14})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{7},L_{14}} t_{J_{12},K_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},L_{14}} t_{J_{12},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{12}, K_{10}, L_{14})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{12} | \hat{0}^{+}_{\alpha} | J_{0} \rangle \langle K_{10} | \hat{1}^{-}_{\alpha} | K_{0} \rangle \langle L_{14} | \hat{0}^{+}_{\beta} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},L_{14}} t_{J_{12},K_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{12} | \hat{0}^{+}_{\alpha} | J_{0} \rangle \langle K_{10} | \hat{1}^{-}_{\alpha} | K_{0} \rangle \langle L_{14} | \hat{0}^{+}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},L_{14}} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{12},K_9,L_{13}) \rangle = \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{12} |\hat{0}_{\alpha}^+ |J_0 \rangle \langle K_9 |\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1,B_1} t_{I_7,L_{13}} t_{J_{12},K_9} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{12} |\hat{0}_{\alpha}^+ |J_0 \rangle \langle K_9 |\hat{0}_{\alpha}^- |K_0 \rangle \langle L_{13} |\hat{1}_{\beta}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,L_{13}} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{12},K_9,L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle \langle L_{13} |\hat{1}^+_{\beta} |L_0\rangle t_{A_1,B_1} t_{I_8,L_{13}} t_{J_{12},K_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle \langle L_{13} |\hat{1}^+_{\beta} |L_0\rangle t_{A_1} t_{B_1} t_{I_8,L_{13}} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{12},K_{10},L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle \langle L_{13} |\hat{1}^+_{\beta} |L_0\rangle t_{A_1,B_1} t_{I_7,L_{13}} t_{J_{12},K_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle \langle L_{13} |\hat{1}^+_{\beta} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,L_{13}} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{12},K_{10},L_{13})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle \langle L_{13} |\hat{1}^+_{\beta} |L_0 \rangle t_{A_1,B_1} t_{I_8,L_{13}} t_{J_{12},K_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle \langle L_{13} |\hat{1}^+_{\beta} |L_0 \rangle t_{A_1} t_{B_1} t_{I_8,L_{13}} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{11},K_9,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle \langle L_{14} |\hat{0}^+_{\beta} |L_0 \rangle t_{A_1,B_1} t_{I_7,L_{14}} t_{J_{11},K_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle \langle L_{14} |\hat{0}^+_{\beta} |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,L_{14}} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{11},K_9,L_{14})\rangle = \\ &+ \frac{-1}{48} \sum_I \sum_J \sum_K \sum_L \langle 1^I 1^J |\hat{g}| 0^L 0^K \rangle \langle I_8| \hat{1}^-_\beta |I_0\rangle \langle J_{11}| \hat{1}^+_\alpha |J_0\rangle \langle K_9| \hat{0}^-_\alpha |K_0\rangle \langle L_{14}| \hat{0}^+_\beta |L_0\rangle t_{A_1,B_1} t_{I_8,L_{14}} t_{J_{11},K_9} \end{split}$$

$$+ \tfrac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{L} 0^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8}, L_{14}} t_{J_{11}, K_{9}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{11}, K_{10}, L_{14})\rangle =$$

$$+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{11},K_{10}}\\ +\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{11},K_{10}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{11}, K_{10}, L_{14})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},L_{14}} t_{J_{11},K_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 0^{L} 1^{K} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},L_{14}} t_{J_{11},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{11}, K_9, L_{13})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 1^{L} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{7},L_{13}} t_{J_{11},K_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 1^{L} 0^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},L_{13}} t_{J_{11},K_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{11}, K_9, L_{13})\rangle =$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{13}}t_{J_{11},K_{9}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{11},K_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{11}, K_{10}, L_{13})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 1^{L} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{7},L_{13}} t_{J_{11},K_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 0^{I} 1^{J} | \hat{g} | 1^{L} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},L_{13}} t_{J_{11},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{11}, K_{10}, L_{13})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{L} 1^{K} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{11} | \hat{1}^{+}_{\alpha} | J_{0} \rangle \langle K_{10} | \hat{1}^{-}_{\alpha} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},L_{13}} t_{J_{11},K_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{J} | \hat{g} | 1^{L} 1^{K} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{11} | \hat{1}^{+}_{\alpha} | J_{0} \rangle \langle K_{10} | \hat{1}^{-}_{\alpha} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},L_{13}} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_9,K_{12},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{14},L_7} t_{J_9,K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{14},L_7} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_9,K_{12},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_8|\hat{1}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},L_8} t_{J_9,K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_8|\hat{1}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},L_8} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{10},K_{12},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},L_7} t_{J_{10},K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},L_7} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{10},K_{12},L_8)\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^I1^J|\hat{g}|1^L0^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{14},L_8}t_{J_{10},K_{12}}\\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^I1^J|\hat{g}|1^L0^K\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle\langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{14},L_8}t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_9,K_{12},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{13},L_7} t_{J_9,K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},L_7} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_9,K_{12},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{13}| \hat{1}^+_{\beta} |I_0\rangle \langle J_9| \hat{0}^-_{\alpha} |J_0\rangle \langle K_{12}| \hat{0}^+_{\alpha} |K_0\rangle \langle L_8| \hat{1}^-_{\beta} |L_0\rangle t_{A_1,B_1} t_{I_{13},L_8} t_{J_9,K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{13}| \hat{1}^+_{\beta} |I_0\rangle \langle J_9| \hat{0}^-_{\alpha} |J_0\rangle \langle K_{12}| \hat{0}^+_{\alpha} |K_0\rangle \langle L_8| \hat{1}^-_{\beta} |L_0\rangle t_{A_1} t_{B_1} t_{I_{13},L_8} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{10},K_{12},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{1}^J |\hat{g}| \mathbf{0}^L \mathbf{0}^K \rangle \langle I_{13}|\hat{\mathbf{1}}^+_{\beta} |I_0\rangle \langle J_{10}|\hat{\mathbf{1}}^-_{\alpha} |J_0\rangle \langle K_{12}|\hat{\mathbf{0}}^+_{\alpha} |K_0\rangle \langle L_7|\hat{\mathbf{0}}^-_{\beta} |L_0\rangle t_{A_1,B_1} t_{I_{13},L_7} t_{J_{10},K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{1}^J |\hat{g}| \mathbf{0}^L \mathbf{0}^K \rangle \langle I_{13}|\hat{\mathbf{1}}^+_{\beta} |I_0\rangle \langle J_{10}|\hat{\mathbf{1}}^-_{\alpha} |J_0\rangle \langle K_{12}|\hat{\mathbf{0}}^+_{\alpha} |K_0\rangle \langle L_7|\hat{\mathbf{0}}^-_{\beta} |L_0\rangle t_{A_1} t_{B_1} t_{I_{13},L_7} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{10},K_{12},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}| 1^L 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_8|\hat{1}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{13},L_8} t_{J_{10},K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}| 1^L 0^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_8|\hat{1}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},L_8} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_9,K_{11},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{14},L_7} t_{J_9,K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle \langle L_7|\hat{0}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{14},L_7} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_9,K_{11},L_8) \rangle = \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_8|\hat{1}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},L_8} t_{J_9,K_{11}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_8|\hat{1}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},L_8} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{10},K_{11},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},L_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},L_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},L_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},L_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},L_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{A_1} t_{A_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{10},K_{11},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_8|\hat{1}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{14},L_8} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_8|\hat{1}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},L_8} t_{J_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_9,K_{11},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 0^L 1^K \rangle \langle I_{13}| \hat{1}^+_{\beta} |I_0\rangle \langle J_9| \hat{0}^-_{\alpha} |J_0\rangle \langle K_{11}| \hat{1}^+_{\alpha} |K_0\rangle \langle L_7| \hat{0}^-_{\beta} |L_0\rangle t_{A_1,B_1} t_{I_{13},L_7} t_{J_9,K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 0^L 1^K \rangle \langle I_{13}| \hat{1}^+_{\beta} |I_0\rangle \langle J_9| \hat{0}^-_{\alpha} |J_0\rangle \langle K_{11}| \hat{1}^+_{\alpha} |K_0\rangle \langle L_7| \hat{0}^-_{\beta} |L_0\rangle t_{A_1} t_{B_1} t_{I_{13},L_7} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_9,K_{11},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^J | \hat{g} | \mathbf{1}^L \mathbf{1}^K \rangle \langle I_{13} | \hat{\mathbf{1}}_{\beta}^+ | I_0 \rangle \langle J_9 | \hat{\mathbf{0}}_{\alpha}^- | J_0 \rangle \langle K_{11} | \hat{\mathbf{1}}_{\alpha}^+ | K_0 \rangle \langle L_8 | \hat{\mathbf{1}}_{\beta}^- | L_0 \rangle t_{A_1,B_1} t_{I_{13},L_8} t_{J_9,K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^J | \hat{g} | \mathbf{1}^L \mathbf{1}^K \rangle \langle I_{13} | \hat{\mathbf{1}}_{\beta}^+ | I_0 \rangle \langle J_9 | \hat{\mathbf{0}}_{\alpha}^- | J_0 \rangle \langle K_{11} | \hat{\mathbf{1}}_{\alpha}^+ | K_0 \rangle \langle L_8 | \hat{\mathbf{1}}_{\beta}^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},L_8} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{10},K_{11},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{13},L_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},L_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},L_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},L_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle I_1 |\hat{1}^-_{\alpha}|I_0 \rangle \langle I_1 |I_0 |I_0 \rangle \langle I_1 |I_0 \rangle \langle I_1 |I_0 |I_0 \rangle \langle I_1 |I_0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{10},K_{11},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{13},L_8}t_{J_{10},K_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^L 1^K \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},L_8}t_{J_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_7,K_{12},L_9)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{14},J_7} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{14},J_7} t_{K_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8,K_{12},L_9)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle \langle L_9 |\hat{0}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_{14},J_8} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle \langle L_9 |\hat{0}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_{14},J_8} t_{K_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_7,K_{12},L_{10})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_{14},J_7} t_{K_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},J_7} t_{K_{12},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8,K_{12},L_{10})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_{14},J_8} t_{K_{12},L_{10}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_{14},J_8} t_{K_{12},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_7,K_{12},L_9)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{13},J_7} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},J_7} t_{K_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_8,K_{12},L_9)\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{13},J_8} t_{K_{12},L_9} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_9|\hat{0}^-_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},J_8} t_{K_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_7,K_{12},L_{10})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{K} \sum_{K} \langle 1^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{13},J_7} t_{K_{12},L_{10}} \end{split}$$

$$+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{12} | \hat{0}^{+}_{\alpha} | K_{0} \rangle \langle L_{10} | \hat{1}^{-}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{13}, J_{7}} t_{K_{12}, L_{10}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_8, K_{12}, L_{10})\rangle =$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{12}|\hat{0}^{+}_{\alpha}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{12},L_{10}}\\+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{12}|\hat{0}^{+}_{\alpha}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{12},L_{10}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_7, K_{11}, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{9}|\hat{0}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{9}|\hat{0}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_8, K_{11}, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{9}|\hat{0}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{8}}t_{K_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{9}|\hat{0}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{8}}t_{K_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_7, K_{11}, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{7}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{7}}t_{K_{11},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_8, K_{11}, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{8}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{8}}t_{K_{11},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_7, K_{11}, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{9}|\hat{0}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{7}}t_{K_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{9}|\hat{0}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{7}}t_{K_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_8, K_{11}, L_9)\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{9}|\hat{0}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{11},L_{9}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{9}|\hat{0}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_7, K_{11}, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{7}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{7}}t_{K_{11},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_8, K_{11}, L_{10})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{13},J_{8}}t_{K_{11},L_{10}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}1^{L}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{11}|\hat{1}^{+}_{\alpha}|K_{0}\rangle\langle L_{10}|\hat{1}^{-}_{\alpha}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{13},J_{8}}t_{K_{11},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{14}, K_{12}, L_7)\rangle =$$

$$+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{14},L_{7}}\\ +\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{14},L_{7}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_{14}, K_{12}, L_8)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{8} | \hat{1}_{\beta}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{9},K_{12}} t_{J_{14},L_{8}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{8} | \hat{1}_{\beta}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9},K_{12}} t_{J_{14},L_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{14},K_{12},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_{14},L_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{14},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{14},K_{12},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_{14},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{13},K_{12},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{J_{13},L_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,K_{12}} t_{J_{13},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{13},K_{12},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{J_{13},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_9,K_{12}} t_{J_{13},L_8} \end{split}$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{13},K_{12},L_7) \rangle = \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_{13},L_7} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_7|\hat{0}^-_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{13},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{13},K_{12},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_{13},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_8|\hat{1}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{13},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{14},K_{11},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_9,K_{11}} t_{J_{14},L_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0 \rangle \langle L_7 |\hat{0}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_9,K_{11}} t_{J_{14},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{14},K_{11},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_9|\hat{0}_\alpha^- |I_0\rangle \langle J_{14}|\hat{0}_\beta^+ |J_0\rangle \langle K_{11}|\hat{1}_\alpha^+ |K_0\rangle \langle L_8|\hat{1}_\beta^- |L_0\rangle t_{A_1,B_1} t_{I_9,K_{11}} t_{J_{14},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_9|\hat{0}_\alpha^- |I_0\rangle \langle J_{14}|\hat{0}_\beta^+ |J_0\rangle \langle K_{11}|\hat{1}_\alpha^+ |K_0\rangle \langle L_8|\hat{1}_\beta^- |L_0\rangle t_{A_1} t_{B_1} t_{I_9,K_{11}} t_{J_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{14},K_{11},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{11}} t_{J_{14},L_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_7|\hat{0}_{\beta}^- |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{11}} t_{J_{14},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{14},K_{11},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_{10},K_{11}} t_{J_{14},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle \langle L_8|\hat{1}^-_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{11}} t_{J_{14},L_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{13},K_{11},L_7)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_9 |\hat{0}_\alpha^- |I_0\rangle \langle J_{13}|\hat{1}_\beta^+ |J_0\rangle \langle K_{11}|\hat{1}_\alpha^+ |K_0\rangle \langle L_7 |\hat{0}_\beta^- |L_0\rangle t_{A_1,B_1} t_{I_9,K_{11}} t_{J_{13},L_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_9 |\hat{0}_\alpha^- |I_0\rangle \langle J_{13}|\hat{1}_\beta^+ |J_0\rangle \langle K_{11}|\hat{1}_\alpha^+ |K_0\rangle \langle L_7 |\hat{0}_\beta^- |L_0\rangle t_{A_1} t_{B_1} t_{I_9,K_{11}} t_{J_{13},L_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{13},K_{11},L_8)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1,B_1} t_{I_9,K_{11}} t_{J_{13},L_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0 \rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0 \rangle \langle L_8 |\hat{1}_{\beta}^- |L_0 \rangle t_{A_1} t_{B_1} t_{I_9,K_{11}} t_{J_{13},L_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{13},K_{11},L_{7})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{13},L_{7}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{7}|\hat{0}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{13},L_{7}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{13},K_{11},L_{8})\rangle = \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{13},L_{8}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{8}|\hat{1}_{\beta}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{13},L_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{14},K_{12},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha}|K_0 \rangle \langle L_9 |\hat{0}^-_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_7,J_{14}} t_{K_{12},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha}|K_0 \rangle \langle L_9 |\hat{0}^-_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_7,J_{14}} t_{K_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{14},K_{12},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^K | \hat{g} | \mathbf{0}^J \mathbf{0}^L \rangle \langle I_8 | \hat{\mathbf{1}}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{\mathbf{0}}_{\beta}^+ | J_0 \rangle \langle K_{12} | \hat{\mathbf{0}}_{\alpha}^+ | K_0 \rangle \langle L_9 | \hat{\mathbf{0}}_{\alpha}^- | L_0 \rangle t_{A_1,B_1} t_{I_8,J_{14}} t_{K_{12},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle \mathbf{1}^I \mathbf{0}^K | \hat{g} | \mathbf{0}^J \mathbf{0}^L \rangle \langle I_8 | \hat{\mathbf{1}}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{\mathbf{0}}_{\beta}^+ | J_0 \rangle \langle K_{12} | \hat{\mathbf{0}}_{\alpha}^+ | K_0 \rangle \langle L_9 | \hat{\mathbf{0}}_{\alpha}^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_8,J_{14}} t_{K_{12},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{14},K_{12},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K | \hat{g} | 0^J 1^L \rangle \langle I_7 | \hat{0}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle \langle K_{12} | \hat{0}_\alpha^+ | K_0 \rangle \langle L_{10} | \hat{1}_\alpha^- | L_0 \rangle t_{A_1,B_1} t_{I_7,J_{14}} t_{K_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K | \hat{g} | 0^J 1^L \rangle \langle I_7 | \hat{0}_\beta^- | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle \langle K_{12} | \hat{0}_\alpha^+ | K_0 \rangle \langle L_{10} | \hat{1}_\alpha^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_7,J_{14}} t_{K_{12},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{14},K_{12},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_I \sum_J \sum_K \sum_L \langle 1^I 0^K |\hat{g}|0^J 1^L \rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_8,J_{14}} t_{K_{12},L_{10}} \end{split}$$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 1^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8}, J_{14}} t_{K_{12}, L_{10}} \rangle dt_{A_{1}} dt_{A_{1}} t_{A_{1}} t_{A_$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{13}, K_{12}, L_9)\rangle =$$

$$+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{12},L_{9}}\\ +\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{9}|\hat{0}_{\alpha}^{-}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{12},L_{9}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{13}, K_{12}, L_9)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},J_{13}} t_{K_{12},L_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} t_{K_{12},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{13}, K_{12}, L_{10})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{L} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{7},J_{13}} t_{K_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 0^{K} | \hat{g} | 1^{J} 1^{L} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{10} | \hat{1}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},J_{13}} t_{K_{12},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{13}, K_{12}, L_{10})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 1^{L} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle \langle K_{12} | \hat{0}^{+}_{\alpha} | K_{0} \rangle \langle L_{10} | \hat{1}^{-}_{\alpha} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},J_{13}} t_{K_{12},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 1^{L} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle \langle K_{12} | \hat{0}^{+}_{\alpha} | K_{0} \rangle \langle L_{10} | \hat{1}^{-}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{13}} t_{K_{12},L_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{14}, K_{11}, L_9)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 1^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{7},J_{14}} t_{K_{11},L_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^{I} 1^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7},J_{14}} t_{K_{11},L_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{14}, K_{11}, L_9)\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{8},J_{14}} t_{K_{11},L_{9}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle \langle L_{9} | \hat{0}_{\alpha}^{-} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8},J_{14}} t_{K_{11},L_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{14},K_{11},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_7,J_{14}} t_{K_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,J_{14}} t_{K_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,J_{14}} t_{K_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,J_{14}} t_{K_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,J_{14}} t_{K_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle \langle L_{10} |\hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{A_1} t_{A_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{14},K_{11},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle \langle L_{10} |\hat{1}^-_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_8,J_{14}} t_{K_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle \langle L_{10} |\hat{1}^-_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_8,J_{14}} t_{K_{11},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{13},K_{11},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 1^J 0^L \rangle \langle I_7 | \hat{0}_\beta^- | I_0 \rangle \langle J_{13} | \hat{1}_\beta^+ | J_0 \rangle \langle K_{11} | \hat{1}_\alpha^+ | K_0 \rangle \langle L_9 | \hat{0}_\alpha^- | L_0 \rangle t_{A_1,B_1} t_{I_7,J_{13}} t_{K_{11},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 1^J 0^L \rangle \langle I_7 | \hat{0}_\beta^- | I_0 \rangle \langle J_{13} | \hat{1}_\beta^+ | J_0 \rangle \langle K_{11} | \hat{1}_\alpha^+ | K_0 \rangle \langle L_9 | \hat{0}_\alpha^- | L_0 \rangle t_{A_1} t_{B_1} t_{I_7,J_{13}} t_{K_{11},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{13},K_{11},L_9)\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|1^J 0^L \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_9|\hat{0}^-_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_8,J_{13}} t_{K_{11},L_9} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|1^J 0^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_9|\hat{0}^-_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_8,J_{13}} t_{K_{11},L_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{13},K_{11},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{13}| \hat{1}^+_{\beta} |J_0\rangle \langle K_{11}| \hat{1}^+_{\alpha} |K_0\rangle \langle L_{10}| \hat{1}^-_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_7,J_{13}} t_{K_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{13}| \hat{1}^+_{\beta} |J_0\rangle \langle K_{11}| \hat{1}^+_{\alpha} |K_0\rangle \langle L_{10}| \hat{1}^-_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,J_{13}} t_{K_{11},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{13},K_{11},L_{10})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|1^J 1^L \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_8,J_{13}} t_{K_{11},L_{10}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|1^J 1^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle \langle L_{10}|\hat{1}^-_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_8,J_{13}} t_{K_{11},L_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_9,K_{12},L_{12})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{12}}t_{J_{9},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{12}}t_{J_{9},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{9},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{9},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{9},K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}t_{I_{1}}t_{I_{1$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{7},J_{7},K_{14},L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{7},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{7},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{7},K_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{7},K_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{7},K_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_7,K_{12},L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{J_7,L_{14}} \rangle \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{J_7,L_{14}} \rangle \\ &+ \frac{1}{48} \sum_{I} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{J_7,L_{14}} \rangle \\ &+ \frac{1}{48} \sum_{I} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{J_7,L_{14}} \rangle \\ &+ \frac{1}{48} \sum_{L} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{I$$

$$+ \frac{1}{48} \sum_{I} \sum_{K} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{L} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{14} | \hat{0}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9}, K_{12}} t_{J_{7}, L_{14}} t_{A_{1}} t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{10},K_{12},L_{12})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{J_{10},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{J_{10},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_9,L_{12}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_9,L_{12}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,K_{12}} t_{J_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,K_{12}} t_{J_{10},L_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,K_{12}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}$$

 $\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_8,K_{14},L_{14})\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{8},L_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 0^{L}1^{J}1^{J}|\hat{g}|0^{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_8,K_{12},L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{J_8,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{L} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_9,K_{12}} t_{J_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_9,K_{12},L_{12})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{12}} t_{J_9,K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{12}} t_{J_9,K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_9,K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{12}} t_{J_9,K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{12}} t_{J_9,K_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{10}|\hat{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{7},K_{14},L_{14})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{7},L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{7},L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{7},K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{7},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{7},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{7},L_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{7},K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{7},K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\left\langle 1^{I}0^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_7,K_{12},L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_7,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_7,L_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_{10}, K_{12}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{12}}t_{J_{10},L_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{12}}t_{J_{10},L_{12}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{12}}t_{J_{10},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{12}}t_{J_{10},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{12}}t_{J_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{12}}t_{J_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{12}}t_{J_{10},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{12}}t_{J_{10},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{A_{1}}t_{A_{1}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 1^{I}1^{J}1^{J}|$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_8, K_{14}, L_{14})\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{8},K_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 1^{I}1^{J}1^{J}|\hat{g}|0^{L$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_8,K_{12},L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_8,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{14}|\hat{0}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{9},K_{12},L_{11})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{9},L_{11}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{9},L_{11}} \end{split}$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{11}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{11}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{9},L_{11}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{9},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{A_{1}}t_{A_{2}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\langle 0^{I}0^{J}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}$$

 $\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_7, K_{14}, L_{13})\rangle =$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\right\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{7},L_{13}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{7},L_{13}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{13}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{7},L_{13}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{7},L_{13}}\right.\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{7},K_{14}}\right.\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{I_{7},L_{13}}\right.\\ &+\frac{1}{48}\sum_{L$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_7,K_{12},L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{7},L_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{7},L_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{10},K_{12},L_{11})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{10},L_{11}}\\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{12}}t_{J_{10},L_{11}}\\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{11}}t_{J_{10},K_{12}}\\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{11}}t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{10},L_{11}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{12}}t_{J_{10},L_{11}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{10},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{7},J_{8},K_{14},L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{8},L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{8},L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{13}}t_{J_{8},K_{14}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{8},L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{8},L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{8},L_{13}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{8},K_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{8},K_{14}}\\ &+\frac{-1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{1}}\\ &+\frac{-1}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_8,K_{12},L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1} t_{I_9,K_{12}} t_{J_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1} t_{B_1} t_{I_9,K_{12}} t_{J_8,L_{13}} \end{split}$$

 $+\frac{1}{48}\sum_{I}^{I}\sum_{J}^{J}\sum_{K}^{K}\sum_{I}^{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{8},K_{14}}$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_9,K_{12},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_9,K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_9,K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{I} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{I} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{I} \sum_{L} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{L} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{L} \sum_{L} \sum_{L} \langle 1^L 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{10$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 0^{K} 1^{L} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10}, L_{11}} t_{J_{9}, K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{L} 0^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10}, L_{11}} t_{J_{9}, K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_7,K_{14},L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,K_{14}}t_{J_7,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|1^L0^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,K_{14}}t_{J_7,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,L_{13}}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,K_{14}}t_{J_7,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,K_{14}}t_{J_7,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,K_{14}}t_{J_7,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,L_{13}}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,L_{13}}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,L_{13}}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,L_{13}}t_{J_7,K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{L}\sum_{L}\langle 1^I0^J|\hat{g}|0^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle\langle L_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_7,K_{12},L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_7,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_7,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{10},K_{12},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{12}} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{12}} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{11}} t_{J_{10},K_{12}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{11}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{11}} t_{J_{10},K_{12$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_8,K_{14},L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{8},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{8},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{13}}t_{J_{8},K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{8},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{8},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{8},K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{8},K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{8},K_{14}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{J$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_8,K_{12},L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_{10},K_{12}}t_{J_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},K_{12}}t_{J_8,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{9},K_{11},L_{12})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{12}}t_{J_{9},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{9},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\left\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{9},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\left\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{7},J_{7},K_{13},L_{14})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{13}}t_{J_{7},L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{13}}t_{J_{7},L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{7},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{7},L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{7},L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{7},L_{14}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{7},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{7},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{7},K_{11},L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{7},L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{9},J_{10},K_{11},L_{12})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{10},L_{12}} + \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{10},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{12}}t_{J_{10},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{10},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{10},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{10},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{10},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{12}}t_{J_{10},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_8,K_{13},L_{14})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I1^J|\hat{g}|1^K0^L\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_7,K_{13}}t_{J_8,L_{14}} \rangle \end{split}$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{13}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{A_{1}}t_{A_{2}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\langle 0^{I}1^{J}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_8,K_{11},L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8 |\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle \langle L_{14} |\hat{0}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_9,K_{11}} t_{J_8,L_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8 |\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle \langle L_{14} |\hat{0}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,K_{11}} t_{J_8,L_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{9},K_{11},L_{12})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{9},L_{12}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{12}}t_{J_{9},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{9},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{12}}t_{J_{9},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{12}}t_{J_{9},K_{11}} \\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_7,K_{13},L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,K_{13}}t_{J_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,K_{13}}t_{J_7,L_{14}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 0^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,L_{14}}t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{7},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{13}}t_{J_{7},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{13}}t_{J_{7},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{7},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{7},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{7},K_{11},L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{7},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{7},L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{10},K_{11},L_{12})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{12}|\hat{0}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},K_{11}}t_{J_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{12}|\hat{0}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},K_{11}}t_{J_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{12}|\hat{0}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{12}}t_{J_{10},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{12}|\hat{0}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{12}}t_{J_{10},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K0^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{12}|\hat{0}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},K_{11}}t_{J_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{12}|\hat{0}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},K_{11}}t_{J_{10},L_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{12}|\hat{0}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{12}}t_{J_{10},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{12}|\hat{0}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{12}}t_{J_{10},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{12}|\hat{0}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{12}}t_{J_{10},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{12}|\hat{0}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{12}}t_{J_{10},K_{11}} \\ &+\frac$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{8},K_{13},L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{13}}t_{J_{8},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{13}}t_{J_{8},L_{14}} \\ &+ \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{8},K_{13}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{8},K_{13}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{13}}t_{J_{8},L_{14}} \end{split}$$

$$\begin{split} &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{13}}t_{J_{8},L_{14}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{8},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{10},J_{8},K_{11},L_{14})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{8},L_{14}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{8},L_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_9,K_{11},L_{11})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K} \langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{9},L_{11}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},K_{11}}t_{J_{9},L_{11}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{11}}t_{J_{9},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L} \langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{9},L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},K_{11}}t_{J_{9},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{9},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{9},K_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}1^{L}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle\langle L_{11}|1^{L}|L_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_7,K_{13},L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^K1^L\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1,B_1}t_{I_7,K_{13}}t_{J_7,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^L1^K\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1,B_1}t_{I_7,K_{13}}t_{J_7,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^K1^L\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1,B_1}t_{I_7,L_{13}}t_{J_7,K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^L1^K\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1,B_1}t_{I_7,L_{13}}t_{J_7,K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^K1^L\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_7,K_{13}}t_{J_7,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^K1^L\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_7,K_{13}}t_{J_7,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^K1^L\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_7,K_{13}}t_{J_7,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^K1^L\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_7,K_{13}}t_{J_7,K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^K1^L\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_7,L_{13}}t_{J_7,K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^K1^L\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|\hat{1}_{\beta}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_7,L_{13}}t_{J_7,K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{L}\sum_{L}\langle 0^I0^J|\hat{g}|1^K1^L\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{13}|$$

$$+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 1^{L} 1^{K} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{13} | \hat{1}_{\beta}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{7}, L_{13}} t_{J_{7}, K_{13}} t_{J_{7}, K_{13}} t_{A_{1}} t_{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_7,K_{11},L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_9,K_{11}}t_{J_7,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_9,K_{11}}t_{J_7,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{10},K_{11},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,K_{11}} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,K_{11}} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,L_{11}} t_{J_{10},K_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,L_{11}} t_{J_{10},K_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_9,K_{11}} t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_9,K_{11}} t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_9,K_{11}} t_{J_{10},K_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_9,L_{11}} t_{J_{10},K_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_9,L_{11}} t_{J_{10},K_{11}} \\ &+ \frac{1}{48} \sum_{L} \sum_{L} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 1^L |K_0\rangle \langle$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{7},J_{8},K_{13},L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{13}}t_{J_{8},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{13}}t_{J_{8},K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{13}}t_{J_{8},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{8},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{8},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{8},K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{8},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{8},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_8,K_{11},L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|1^K 1^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_9,K_{11}}t_{J_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|1^K 1^L \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle \langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_9,K_{11}}t_{J_8,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_9,K_{11},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0 \rangle \langle J_9| \hat{0}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{10},K_{11}} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0 \rangle \langle J_9| \hat{0}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{10},K_{11}} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0 \rangle \langle J_9| \hat{0}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_9,K_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0 \rangle \langle J_9| \hat{0}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ |L_0 \rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_9,K_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0 \rangle \langle J_9| \hat{0}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},K_{11}} t_{J_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0 \rangle \langle J_9| \hat{0}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},K_{11}} t_{J_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0 \rangle \langle J_9| \hat{0}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},L_{11}} t_{J_9,K_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0 \rangle \langle J_9| \hat{0}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},L_{11}} t_{J_9,K_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{L} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0 \rangle \langle J_9| \hat{0}_{\alpha}^- |J_0 \rangle \langle K_{11}| \hat{1}_{\alpha}^+ |K_0 \rangle \langle L_{11}| \hat{1}_{\alpha}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},L_{11}} t_{J_9,K$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{7},K_{13},L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\left\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{13}}t_{J_{7},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{13}}t_{J_{7},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{13}}t_{J_{7},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{13}}t_{J_{7},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{13}}t_{J_{7},L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{7},K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{7},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{7},K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{L}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_7, K_{11}, L_{13})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},K_{11}}t_{J_{7},L_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}1^{L}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},K_{11}}t_{J_{7},L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{10},K_{11},L_{11})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},K_{11}}t_{J_{10},L_{11}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},K_{11}}t_{J_{10},L_{11}}\\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{11}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{11}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},K_{11}}t_{J_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},K_{11}}t_{J_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},K_{11}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{11}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{11}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{11}}\\ &+\frac{1}{48}\sum_{L}\sum_{L}\sum_{L}\langle 1^L1^L$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_8,K_{13},L_{13})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,K_{13}}t_{J_8,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,K_{13}}t_{J_8,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,L_{13}}t_{J_8,K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,K_{13}}t_{J_8,K_{13}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,K_{13}}t_{J_8,L_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,K_{13}}t_{J_8,K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^I1^J|\hat{g}|1^K1^L\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle\langle L_{13}|\hat{1}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,L_{13}}t_{J_8,K_{13}} \\ &+\frac{-1}{48}\sum_{I}\sum_{J}\sum_{L}\langle 1^I1^J|\hat{g}|1^L1^K\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle I_1|\hat{I}^+$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_8,K_{11},L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},K_{11}} t_{J_8,L_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^K 1^L \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle \langle L_{13}|\hat{1}_{\beta}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},K_{11}} t_{J_8,L_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_9,K_{12},L_{14})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L0^K\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_7,L_{14}}t_{J_9,K_{12}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|0^L0^K\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle\langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_7,L_{14}}t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_9,K_{12},L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1,B_1}t_{I_8,L_{14}}t_{J_9,K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,L_{14}}t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{10},K_{12},L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{12} |\hat{0}_{\alpha}^+ |K_0 \rangle \langle L_{14} |\hat{0}_{\beta}^+ |L_0 \rangle t_{A_1,B_1} t_{I_7,L_{14}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0 \rangle \langle K_{12} |\hat{0}_{\alpha}^+ |K_0 \rangle \langle L_{14} |\hat{0}_{\beta}^+ |L_0 \rangle t_{A_1} t_{B_1} t_{I_7,L_{14}} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{10},K_{12},L_{14})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1,B_1} t_{I_8,L_{14}} t_{J_{10},K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle \langle L_{14}|\hat{0}^+_{\beta}|L_0 \rangle t_{A_1} t_{B_1} t_{I_8,L_{14}} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_9,K_{12},L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle \langle L_{13} |\hat{1}^+_{\beta} |L_0\rangle t_{A_1,B_1} t_{I_7,L_{13}} t_{J_9,K_{12}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle \langle L_{13} |\hat{1}^+_{\beta} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,L_{13}} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_9,K_{12},L_{13})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_8|\hat{1}^-_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha} |K_0\rangle \langle L_{13}|\hat{1}^+_{\beta} |L_0\rangle t_{A_1,B_1} t_{I_8,L_{13}} t_{J_9,K_{12}} \end{split}$$

$$+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{J} | \hat{g} | 1^{L} 0^{K} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{9} | \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{12} | \hat{0}^{+}_{\alpha} | K_{0} \rangle \langle L_{13} | \hat{1}^{+}_{\beta} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{8}, L_{13}} t_{J_{9}, K_{12}} dt_{A_{1}} t_{A_{1}} t$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{10}, K_{12}, L_{13})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{13}}t_{J_{10},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{10},K_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{10}, K_{12}, L_{13})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{13}}t_{J_{10},K_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}0^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{10},K_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_9, K_{11}, L_{14})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{9},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{9},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_9, K_{11}, L_{14})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{9},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{9},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{10}, K_{11}, L_{14})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{14}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{14}}t_{J_{10},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{10}, K_{11}, L_{14})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{14}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{14}|\hat{0}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{14}}t_{J_{10},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_9, K_{11}, L_{13})\rangle =$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{13}}t_{J_{9},K_{11}}\\+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{9},K_{11}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_9, K_{11}, L_{13})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{13}}t_{J_{9},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{9},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{10}, K_{11}, L_{13})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},L_{13}}t_{J_{10},K_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},L_{13}}t_{J_{10},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{10}, K_{11}, L_{13})\rangle =$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},L_{13}}t_{J_{10},K_{11}}\\+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle\langle L_{13}|\hat{1}_{\beta}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},L_{13}}t_{J_{10},K_{11}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_9, K_7, L_{12})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{9} | \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{12} | \hat{0}^{+}_{\alpha} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{14},K_{7}} t_{J_{9},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 0^{K} 0^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{9} | \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle \langle L_{12} | \hat{0}^{+}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},K_{7}} t_{J_{9},L_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_9,K_8,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_8 |\hat{1}^-_{\beta} |K_0\rangle \langle L_{12} |\hat{0}^+_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_{14},K_8} t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_8 |\hat{1}^-_{\beta} |K_0\rangle \langle L_{12} |\hat{0}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_{14},K_8} t_{J_9,L_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{10},K_7,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_{14},K_7} t_{J_{10},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},K_7} t_{J_{10},L_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{10},K_8,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_{14},K_8} t_{J_{10},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},K_8} t_{J_{10},L_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_9,K_7,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{13},K_7} t_{J_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},K_7} t_{J_9,L_{12}} \end{split}$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_9,K_8,L_{12})\rangle = \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle \langle K_8|\hat{1}^-_{\beta} |K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_{13},K_8} t_{J_9,L_{12}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle \langle K_8|\hat{1}^-_{\beta} |K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_{13},K_8} t_{J_9,L_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{10},K_7,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_{13},K_7} t_{J_{10},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},K_7} t_{J_{10},L_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{10},K_8,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^I 1^J |\hat{g}|1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_{13},K_8} t_{J_{10},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^K 0^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},K_8} t_{J_{10},L_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_9,K_7,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{14},K_7} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{14},K_7} t_{J_9,L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_9,K_8,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{14} |\hat{0}^+_{\beta}| I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}| J_0 \rangle \langle K_8 |\hat{1}^-_{\beta}| K_0 \rangle \langle L_{11} |\hat{1}^+_{\alpha}| L_0 \rangle t_{A_1,B_1} t_{I_{14},K_8} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_{14} |\hat{0}^+_{\beta}| I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}| J_0 \rangle \langle K_8 |\hat{1}^-_{\beta}| K_0 \rangle \langle L_{11} |\hat{1}^+_{\alpha}| L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},K_8} t_{J_9,L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{10},K_7,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_{14},K_7} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},K_7} t_{J_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_{10},K_8,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_{14},K_8} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},K_8} t_{J_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_9,K_7,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{13},K_7} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},K_7} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},K_7} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},K_7} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},K_7} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},K_7} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{L} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle I_0|\hat{0}^-_{\alpha}|J_0\rangle \langle I_1|\hat{0}^-_{\beta}|K_0\rangle \langle I_1|\hat{0}^-_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_9,K_8,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{13},K_8} t_{J_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},K_8} t_{J_9,L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{10},K_7,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{13},K_7} t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},K_7} t_{J_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_{10},K_8,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{13},K_8}t_{J_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^K 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},K_8}t_{J_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_7,K_9,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{14},J_7} t_{K_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}|0^J 0^L \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{14},J_7} t_{K_9,L_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8,K_9,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle \langle L_{12} |\hat{0}^+_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_{14},J_8} t_{K_9,L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 0^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle \langle L_{12} |\hat{0}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_{14},J_8} t_{K_9,L_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_7,K_{10},L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_I \sum_J \sum_K \sum_L \langle 0^I 1^K |\hat{g}|0^J 0^L \rangle \langle I_{14}|\hat{0}^+_\beta |I_0\rangle \langle J_7|\hat{0}^-_\beta |J_0\rangle \langle K_{10}|\hat{1}^-_\alpha |K_0\rangle \langle L_{12}|\hat{0}^+_\alpha |L_0\rangle t_{A_1,B_1} t_{I_{14},J_7} t_{K_{10},L_{12}} \end{split}$$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{10} | \hat{1}^{-}_{\alpha} | K_{0} \rangle \langle L_{12} | \hat{0}^{+}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14}, J_{7}} t_{K_{10}, L_{12}} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{10} \rangle \langle I_{14} | I_{10} | I_{10} \rangle \langle I_{14} | I_{10} \rangle \langle I_{14} | I_{10} \rangle \langle I_{14} | I_{10} | I_{10} \rangle \langle I_{14} | I_{10} \rangle \langle I_{14} | I_{10} \rangle \langle I_{14} | I_{10} | I_{10} \rangle \langle I_{14} |$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_8, K_{10}, L_{12})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{14},J_{8}} t_{K_{10},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{8}} t_{K_{10},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_7, K_9, L_{12})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle \langle L_{12} | \hat{0}^{+}_{\alpha} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{13},J_{7}} t_{K_{9},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle \langle L_{12} | \hat{0}^{+}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{13},J_{7}} t_{K_{9},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_8, K_9, L_{12})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle \langle L_{12} | \hat{0}^{+}_{\alpha} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{13},J_{8}} t_{K_{9},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 0^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{8} | \hat{1}^{-}_{\beta} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle \langle L_{12} | \hat{0}^{+}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{13},J_{8}} t_{K_{9},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_7, K_{10}, L_{12})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{13},J_{7}} t_{K_{10},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^{I} 1^{K} | \hat{g} | 0^{J} 0^{L} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{13},J_{7}} t_{K_{10},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{13}, J_8, K_{10}, L_{12})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{13},J_{8}} t_{K_{10},L_{12}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{K} | \hat{g} | 1^{J} 0^{L} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle \langle L_{12} | \hat{0}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{13},J_{8}} t_{K_{10},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{14}, J_7, K_9, L_{11})\rangle =$$

$$\begin{split} &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 0^{J} 1^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle \langle L_{11} | \hat{1}^{+}_{\alpha} | L_{0} \rangle t_{A_{1},B_{1}} t_{I_{14},J_{7}} t_{K_{9},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{K} | \hat{g} | 0^{J} 1^{L} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle \langle L_{11} | \hat{1}^{+}_{\alpha} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{14},J_{7}} t_{K_{9},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_8,K_9,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle \langle L_{11} |\hat{1}^+_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_{14},J_8} t_{K_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle \langle L_{11} |\hat{1}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_{14},J_8} t_{K_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle \langle L_{11} |\hat{1}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_{14},J_8} t_{K_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle \langle L_{11} |\hat{1}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_{14},J_8} t_{K_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^K |\hat{g}| 1^J 1^L \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle \langle L_{11} |\hat{1}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{A_1} t_{A_2} t_{A_3} t_{A_4} t_{A_4} t_{A_5} t$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{14},J_7,K_{10},L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 0^J 1^L \rangle \langle I_{14} | \hat{0}_{\beta}^+ | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle \langle L_{11} | \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1,B_1} t_{I_{14},J_7} t_{K_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K | \hat{g} | 0^J 1^L \rangle \langle I_{14} | \hat{0}_{\beta}^+ | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle \langle L_{11} | \hat{1}_{\alpha}^+ | L_0 \rangle t_{A_1} t_{B_1} t_{I_{14},J_7} t_{K_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{14},J_{8},K_{10},L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{K}|\hat{g}|1^{J} 1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{14},J_{8}}t_{K_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 1^{K}|\hat{g}|1^{J} 1^{L}\rangle \langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle \langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle \langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle \langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{14},J_{8}}t_{K_{10},L_{11}} \end{split}$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_7,K_9,L_{11}) \rangle = \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 0^J 1^L \rangle \langle I_{13} | \hat{1}^+_{\beta} | I_0 \rangle \langle J_7 | \hat{0}^-_{\beta} | J_0 \rangle \langle K_9 | \hat{0}^-_{\alpha} | K_0 \rangle \langle L_{11} | \hat{1}^+_{\alpha} | L_0 \rangle t_{A_1,B_1} t_{I_{13},J_7} t_{K_9,L_{11}} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K | \hat{g} | 0^J 1^L \rangle \langle I_{13} | \hat{1}^+_{\beta} | I_0 \rangle \langle J_7 | \hat{0}^-_{\beta} | J_0 \rangle \langle K_9 | \hat{0}^-_{\alpha} | K_0 \rangle \langle L_{11} | \hat{1}^+_{\alpha} | L_0 \rangle t_{A_1} t_{B_1} t_{I_{13},J_7} t_{K_9,L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_8,K_9,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{13},J_8} t_{K_9,L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{13},J_8} t_{K_9,L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_7,K_{10},L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{13},J_7}t_{K_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},J_7}t_{K_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{13},J_8,K_{10},L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|1^J 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{13},J_8}t_{K_{10},L_{11}} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|1^J 1^L \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{13},J_8}t_{K_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{14},K_7,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_9,L_{12}} t_{J_{14},K_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{14},K_8,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,L_{12}} t_{J_{14},K_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_{14},K_8} \end{split}$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{14},K_7,L_{12})\rangle = \\ & + \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^I0^J|\hat{g}|0^L0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{12}}t_{J_{14},K_7} \\ & + \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^I0^J|\hat{g}|0^L0^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{12}}t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{14},K_8,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{10},L_{12}} t_{J_{14},K_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{12}} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{13},K_7,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_9,L_{12}} t_{J_{13},K_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{13},K_8,L_{12})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_9,L_{12}} t_{J_{13},K_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_{13},K_8} \end{split}$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{13},K_7,L_{12}) \rangle = \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{12}} t_{J_{13},K_7} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{12}} t_{J_{13},K_7} \end{split}$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{13},K_8,L_{12})\rangle = \\ & + \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_{10},L_{12}}t_{J_{13},K_8} \\ & + \frac{-1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^I1^J|\hat{g}|0^L1^K\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle\langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_{10},L_{12}}t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{14},K_7,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_9 |\hat{0}_\alpha^- |I_0\rangle \langle J_{14} |\hat{0}_\beta^+ |J_0\rangle \langle K_7 |\hat{0}_\beta^- |K_0\rangle \langle L_{11} |\hat{1}_\alpha^+ |L_0\rangle t_{A_1,B_1} t_{I_9,L_{11}} t_{J_{14},K_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_9 |\hat{0}_\alpha^- |I_0\rangle \langle J_{14} |\hat{0}_\beta^+ |J_0\rangle \langle K_7 |\hat{0}_\beta^- |K_0\rangle \langle L_{11} |\hat{1}_\alpha^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_9,L_{11}} t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{14},K_8,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,L_{11}} t_{J_{14},K_8} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 1^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_9,L_{11}} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{14},K_7,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_{14},K_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{11}} t_{J_{14},K_7} \end{split}$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{14},K_8,L_{11})\rangle = \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^I 0^J |\hat{g}|1^L 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_{14},K_8} \\ & + \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|1^L 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{11}} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_{13},K_7,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 0^K \rangle \langle I_9|\hat{0}_\alpha^- |I_0\rangle \langle J_{13}|\hat{1}_\beta^+ |J_0\rangle \langle K_7|\hat{0}_\beta^- |K_0\rangle \langle L_{11}|\hat{1}_\alpha^+ |L_0\rangle t_{A_1,B_1} t_{I_9,L_{11}} t_{J_{13},K_7} \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 0^K \rangle \langle I_9|\hat{0}_\alpha^- |I_0\rangle \langle J_{13}|\hat{1}_\beta^+ |J_0\rangle \langle K_7|\hat{0}_\beta^- |K_0\rangle \langle L_{11}|\hat{1}_\alpha^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_9,L_{11}} t_{J_{13},K_7} \end{split}$$

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$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_{13},K_8,L_{11})\rangle = \\ &+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^L 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_{13},K_8} \end{split}$$

$$+ \frac{-1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^{I} 1^{J} | \hat{g} | 1^{L} 1^{K} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{13} | \hat{1}_{\beta}^{+} | J_{0} \rangle \langle K_{8} | \hat{1}_{\beta}^{-} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{10}, L_{11}} t_{J_{13}, K_{8}} t_{A_{10}, L_{11}} t_{A_{11}, L_{11}, L_{11}, L_{11}} t_{A_{11}, L_{11}, L_{11}} t_{A_{11}, L_{11}, L_{11}} t_{A_{11}, L_{11}, L_{11}} t_{A_{11}, L_{11}, L_{11}, L_{11}} t_{A_{11}, L_{11}, L_{11$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{14}, K_9, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{9},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{14}, K_9, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{9},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{14}, K_{10}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{10},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{14}, K_{10}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|0^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{10},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{13}, K_9, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{L}\sum_{K}\sum_{L}\langle 0^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{9},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{13}, K_9, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}}t_{K_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{9},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{13}, K_{10}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{13}}t_{K_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{13}}t_{K_{10},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{13}, K_{10}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{13}}t_{K_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{K}|\hat{g}|1^{J}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{13}}t_{K_{10},L_{12}} \end{split}$$

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$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{14}, K_9, L_{11})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},J_{14}}t_{K_{9},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},J_{14}}t_{K_{9},L_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{14}, K_{10}, L_{11})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},J_{14}}t_{K_{10},L_{11}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{K}|\hat{g}|0^{J}1^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},J_{14}}t_{K_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{14},K_{10},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{11} |\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_8,J_{14}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|0^J 1^L \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{11} |\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_8,J_{14}} t_{K_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{13},K_9,L_{11})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_7,J_{13}}t_{K_9,L_{11}} \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^K|\hat{g}|1^J1^L\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle\langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_7,J_{13}}t_{K_9,L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{13},K_9,L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 1^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_8,J_{13}}t_{K_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^K |\hat{g}|1^J 1^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,J_{13}}t_{K_9,L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{13},K_{10},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle \langle L_{11} |\hat{1}^+_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_7,J_{13}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^K |\hat{g}| 1^J 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle \langle L_{11} |\hat{1}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,J_{13}} t_{K_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{13},K_{10},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|1^J 1^L \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_8,J_{13}} t_{K_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^K |\hat{g}|1^J 1^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_8,J_{13}} t_{K_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_7,K_{14},L_{12})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_9,L_{12}} t_{J_7,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_7,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_7,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_7,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_7,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_7,K_{14}} \\ &+ \frac{1}{48} \sum_{L} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{A_2} t_{A_3} t_{A_4} \delta t_{A_4} \delta t_{A_5} \delta t$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_8,K_{14},L_{12})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_9,L_{12}} t_{J_8,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_7,K_{14},L_{12})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{12}} t_{J_7,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{12}} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_8,K_{14},L_{12})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{12}} t_{J_8,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{12}} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_7,K_{13},L_{12})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_9,L_{12}} t_{J_7,K_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_8,K_{13},L_{12})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_9,L_{12}} t_{J_8,K_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_9,L_{12}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_7,K_{13},L_{12})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_{10},L_{12}} t_{J_7,K_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}|0^L 1^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{12}|\hat{0}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{12}} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_8,K_{13},L_{12})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{12}} t_{J_8,K_{13}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^L 1^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle \langle L_{12}|\hat{0}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{12}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_7,K_{14},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_9,L_{11}} t_{J_7,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_9,L_{11}} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_8,K_{14},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha} |I_0\rangle \langle J_8|\hat{1}^-_{\beta} |J_0\rangle \langle K_{14}|\hat{0}^+_{\beta} |K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_9,L_{11}} t_{J_8,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^L 0^K \rangle \langle I_9|\hat{0}^-_{\alpha} |I_0\rangle \langle J_8|\hat{1}^-_{\beta} |J_0\rangle \langle K_{14}|\hat{0}^+_{\beta} |K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_9,L_{11}} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_7,K_{14},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_7,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^L 0^K \rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle \langle L_{11}|\hat{1}_{\alpha}^+ |L_0\rangle t_{A_1} t_{B_1} t_{I_{10},L_{11}} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_{10},J_8,K_{14},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^L 0^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_{10},L_{11}} t_{J_8,K_{14}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^L 0^K \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_{10},L_{11}} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_9,J_7,K_{13},L_{11})\rangle = \\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^I0^J|\hat{g}|1^L1^K\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle\langle L_{11}|\hat{1}_{\alpha}^+|L_0\rangle t_{A_1,B_1}t_{I_9,L_{11}}t_{J_7,K_{13}} \end{split}$$

$$+ \tfrac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^{I} 0^{J} | \hat{g} | 1^{L} 1^{K} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle \langle L_{11} | \hat{1}_{\alpha}^{+} | L_{0} \rangle t_{A_{1}} t_{B_{1}} t_{I_{9}, L_{11}} t_{J_{7}, K_{13}} t_{A_{1}} t_$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_9, J_8, K_{13}, L_{11})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{9},L_{11}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{9},L_{11}}t_{J_{8},K_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_7, K_{13}, L_{11})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{11}}t_{J_{7},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{11}}t_{J_{7},K_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_{10}, J_8, K_{13}, L_{11})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{10},L_{11}}t_{J_{8},K_{13}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{L}1^{K}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{10},L_{11}}t_{J_{8},K_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_9, K_{14}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{9},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_9, K_{14}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{9},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{10}, K_{14}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{14}}t_{J_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{14}}t_{J_{10},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{10}, K_{14}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|0^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{10},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_9, K_{13}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{13}}t_{J_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{9},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_9, K_{13}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{13}}t_{J_{9},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{13}}t_{J_{9},L_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_7, J_{10}, K_{13}, L_{12})\rangle =$$

$$+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{7},K_{13}}t_{J_{10},L_{12}}\\+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 0^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{7},K_{13}}t_{J_{10},L_{12}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_1, I_8, J_{10}, K_{13}, L_{12})\rangle =$$

$$\begin{split} &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{K}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{13}}t_{J_{10},L_{12}}\\ &+\frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}1^{J}|\hat{g}|1^{K}0^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle\langle L_{12}|\hat{0}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{13}}t_{J_{10},L_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_9,K_{14},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta}|K_0 \rangle \langle L_{11} |\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_7,K_{14}} t_{J_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}|0^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta}|K_0 \rangle \langle L_{11} |\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{14}} t_{J_9,L_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{1},I_{8},J_{9},K_{14},L_{11})\rangle = \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1},B_{1}}t_{I_{8},K_{14}}t_{J_{9},L_{11}} \\ &+ \frac{1}{48}\sum_{I}\sum_{J}\sum_{K}\sum_{L}\langle 1^{I}0^{J}|\hat{g}|0^{K}1^{L}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle\langle L_{11}|\hat{1}_{\alpha}^{+}|L_{0}\rangle t_{A_{1}}t_{B_{1}}t_{I_{8},K_{14}}t_{J_{9},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{10},K_{14},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_7,K_{14}}t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_7,K_{14}}t_{J_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{10},K_{14},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1}t_{I_8,K_{14}}t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|0^K 1^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1}t_{B_1}t_{I_8,K_{14}}t_{J_{10},L_{11}} \end{split}$$

$$\begin{split} & \langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_9,K_{13},L_{11})\rangle = \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta}|K_0 \rangle \langle L_{11} |\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1,B_1} t_{I_7,K_{13}} t_{J_9,L_{11}} \\ & + \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta}|K_0 \rangle \langle L_{11} |\hat{1}^+_{\alpha}|L_0 \rangle t_{A_1} t_{B_1} t_{I_7,K_{13}} t_{J_9,L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_9,K_{13},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_8| \hat{1}^-_{\beta} |I_0\rangle \langle J_9| \hat{0}^-_{\alpha} |J_0\rangle \langle K_{13}| \hat{1}^+_{\beta} |K_0\rangle \langle L_{11}| \hat{1}^+_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_8,K_{13}} t_{J_9,L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 1^I 0^J |\hat{g}| 1^K 1^L \rangle \langle I_8| \hat{1}^-_{\beta} |I_0\rangle \langle J_9| \hat{0}^-_{\alpha} |J_0\rangle \langle K_{13}| \hat{1}^+_{\beta} |K_0\rangle \langle L_{11}| \hat{1}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_8,K_{13}} t_{J_9,L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_7,J_{10},K_{13},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle \langle K_{13}|\hat{1}^+_{\beta} |K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha} |L_0\rangle t_{A_1,B_1} t_{I_7,K_{13}} t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{L} \langle 0^I 1^J |\hat{g}| 1^K 1^L \rangle \langle I_7 |\hat{0}^-_{\beta} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle \langle K_{13}|\hat{1}^+_{\beta} |K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha} |L_0\rangle t_{A_1} t_{B_1} t_{I_7,K_{13}} t_{J_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_1,I_8,J_{10},K_{13},L_{11})\rangle = \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \langle 1^I 1^J |\hat{g}|1^K 1^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1,B_1} t_{I_8,K_{13}} t_{J_{10},L_{11}} \\ &+ \frac{1}{48} \sum_{I} \sum_{J} \sum_{K} \sum_{K} \sum_{L} \langle 1^I 1^J |\hat{g}|1^K 1^L \rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle \langle L_{11}|\hat{1}^+_{\alpha}|L_0\rangle t_{A_1} t_{B_1} t_{I_8,K_{13}} t_{J_{10},L_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{12},J_{9},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{12},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{12},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{9}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{9}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{14},J_{7},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{14},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{14},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{7}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{7}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{14},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{12},J_{9},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{12},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{12},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{10}}t_{I_{12},J_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{10}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{14},J_{7},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{14},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{14},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{8}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{8}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{14},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{12},J_{10},K_9)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^J0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_{12},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^K1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_{12},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^J0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},K_9}t_{I_{12},J_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^K1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},K_9}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{14},J_8,K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^J0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_{14},K_7} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^K1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_{14},K_7} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^J0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_7}t_{I_{14},J_8} \end{split}$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I | \hat{g} | 0^K 1^J \rangle \langle A_{14} | \hat{0}^+_\beta | A_1 \rangle \langle I_{14} | \hat{0}^+_\beta | I_0 \rangle \langle J_8 | \hat{1}^-_\beta | J_0 \rangle \langle K_7 | \hat{0}^-_\beta | K_0 \rangle t_{B_1} t_{A_{14}, K_7} t_{I_{14}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{14},J_{10},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^J0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{12},J_{10},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{12},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{12},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{10}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{10}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{14},J_8,K_8)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^J1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_{14},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^K1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_{14},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^J1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_8}t_{I_{14},J_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^K1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_8}t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{14},J_{10},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|1^J 1^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{12},J_{10}} t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{11},J_{9},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{11},K_{9}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{11},K_{9}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{9}}t_{I_{11},J_{9}} \end{split}$$

$$+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{A} 1^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle A_{12} | \hat{0}_{\alpha}^{+} | A_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{9} | \hat{0}_{\alpha}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{12}, K_{9}} t_{I_{11}, J_{9}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{13},J_{7},K_{7})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{13},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{13},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{7}}t_{I_{13},J_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{7}}t_{I_{13},J_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_1, I_{13}, J_9, K_7)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|0^J 0^K\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{12}, J_9}t_{I_{13}, K_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{11},J_9,K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|0^J 1^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_{11},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|1^K 0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},J_9}t_{I_{11},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|0^J 1^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},K_{10}}t_{I_{11},J_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|1^K 0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},K_{10}}t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{13},J_7,K_8)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|0^J 1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_{13},K_8} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|1^K 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_{13},K_8} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|0^J 1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_8}t_{I_{13},J_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|1^K 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_8}t_{I_{13},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_1, I_{13}, J_9, K_8)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{13},K_{8}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{11},J_{10},K_{9})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{11},K_{9}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{11},K_{9}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{9}}t_{I_{11},J_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{9}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{13},J_{8},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{7}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{7}}t_{I_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{13},J_{10},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|1^J 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{12},J_{10}} t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{11},J_{10},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{11},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{11},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{10}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{10}}t_{I_{11},J_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_{13}, J_8, K_8)\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{8}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{8}}t_{I_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{13},J_{10},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^J1^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{12},J_{9},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{12},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{12},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{14},J_7,K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^J0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},J_7}t_{I_{14},K_7} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^K0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},J_7}t_{I_{14},K_7} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^J0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},K_7}t_{I_{14},J_7} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^K0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},K_7}t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{14},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{11},J_9} t_{I_{14},K_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_{12}, J_9, K_{10})\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{11}|\hat{1}^{+}_{\alpha}|A_{1}\rangle\langle I_{12}|\hat{0}^{+}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{12},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{11}|\hat{1}^{+}_{\alpha}|A_{1}\rangle\langle I_{12}|\hat{0}^{+}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{12},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{11}|\hat{1}^{+}_{\alpha}|A_{1}\rangle\langle I_{12}|\hat{0}^{+}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{11}|\hat{1}^{+}_{\alpha}|A_{1}\rangle\langle I_{12}|\hat{0}^{+}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}^{-}_{\alpha}|J_{0}\rangle\langle K_{10}|\hat{1}^{-}_{\alpha}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{14},J_{7},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{14},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{14},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{11},J_9} t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{12},J_{10},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{12},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{12},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{12},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{14},J_8,K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^J0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_{14},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^K1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_{14},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^J0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},K_7}t_{I_{14},J_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^K1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},K_7}t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{14},J_{10},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_{14},K_7} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_{14},K_7} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_{14},K_7} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle I_0 |\hat{0}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_{14},K_7} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle I_1 |\hat{0}^-_{\beta}|I_0 \rangle \langle I_1 |I_1 \rangle \langle I_1 \rangle \langle I_1 |I_1 \rangle \langle I_1 \rangle \langle I_1 |I_1 \rangle$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{12},J_{10},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{12},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{12},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{12},J_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{14},J_{8},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{14}|\hat{0}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{14},J_{10},K_8)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^J1^K\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle\langle K_8|\hat{1}_{\beta}^{-}|K_0\rangle t_{B_1}t_{A_{11},J_{10}}t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{11},J_{9},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{13},J_{7},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{13},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{13},J_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_{13}, J_9, K_7)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A 1^I|\hat{g}|0^J 0^K\rangle \langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle \langle J_9|\hat{0}_{\alpha}^-|J_0\rangle \langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{11},J_9}t_{I_{13},K_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{11},J_{9},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{13},J_{7},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{13},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13},K_{13$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{13},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{11},J_9} t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{11},J_{10},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{11},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{13},J_{8},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{13},J_{10},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J0^K\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{11},J_{10}}t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{11},J_{10},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{11},J_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{13},J_8,K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{13},J_8} t_{I_{13},K_8} \end{split}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{13},J_{10},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J1^K\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{11},J_{10}}t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{14},J_7,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\alpha}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_9} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{14},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_9} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{14},J_7,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 0^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_{10}} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{14},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_{10}} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{13},J_7,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 0^A 1^I |\hat{g}|0^K 0^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_9} t_{I_{13},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_1, I_{13}, J_8, K_9)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|0^K 1^J\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle \langle J_8|\hat{1}_{\beta}^-|J_0\rangle \langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12}, K_9}t_{I_{13}, J_8}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_1, I_{13}, J_7, K_{10})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|1^K 0^J\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle \langle J_7|\hat{0}_{\beta}^-|J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},K_{10}}t_{I_{13},J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{13},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|1^K 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_{10}} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{14},J_7,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},K_9} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{14},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},K_9} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{14},J_7,K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^K0^J\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{B_1}t_{A_{11},K_{10}}t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{14},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 0^I |\hat{g}|1^K 1^J \rangle \langle A_{11}|\hat{1}^+_\alpha |A_1\rangle \langle I_{14}|\hat{0}^+_\beta |I_0\rangle \langle J_8|\hat{1}^-_\beta |J_0\rangle \langle K_{10}|\hat{1}^-_\alpha |K_0\rangle t_{B_1} t_{A_{11},K_{10}} t_{I_{14},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_{13}, J_7, K_9)\rangle =$$

$$+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{A} 1^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle A_{11} | \hat{1}_{\alpha}^{+} | A_{1} \rangle \langle I_{13} | \hat{1}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{9} | \hat{0}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{11}, K_{9}} t_{I_{13}, J_{7}} dt_{A_{11}, K_{9}} dt_{A_{11}, K_{9}, K_{9}} dt_{A_{11}, K_{9}} dt_{A_{11}, K_{9}} dt_{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{13},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},K_9} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{13},J_7,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^K 0^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},K_{10}} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{13},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^K 1^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},K_{10}} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_{12},K_9)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|0^I0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{B_1}t_{A_{12},I_9}t_{J_{12},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^K0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{B_1}t_{A_{12},I_9}t_{J_{12},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|0^I0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{B_1}t_{A_{12},K_9}t_{I_9,J_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^K0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{B_1}t_{A_{12},K_9}t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_7,J_{14},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|0^I0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_7}t_{J_{14},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^K0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_7}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|0^I0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_7}t_{I_7,J_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^K0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_7}t_{I_7,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_1, I_9, J_{14}, K_7)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^J|\hat{g}|0^I 0^K\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle I_9|\hat{0}_{\alpha}^-|I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle \langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{12},I_9}t_{J_{14},K_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{9},J_{12},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{12},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{10}}t_{I_{9},J_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{10}}t_{I_{9},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{7},J_{14},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{8}}t_{I_{7},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{8}}t_{I_{7},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_{14},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 1^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_{12},K_9)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_{12},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^K0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_{12},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},K_9}t_{I_{10},J_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^K0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},K_9}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_{14},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_{14},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^K0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_7}t_{I_8,J_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^K0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_7}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_{14},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{10},J_{12},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{12},K_{12},K_{10}}t_{J_{12},K_{12},K_{12}}t_{J_{12},K_{12},K_{12}}t_{J_{12},K_{12},K_{12},K_{12}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_{14},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_{14},K_8}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^K0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_{14},K_8}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_8}t_{I_8,J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^K0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_8}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_{14},K_8)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I1^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{9},J_{11},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{9}}t_{I_{9},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{9}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_7,J_{13},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|0^I 0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_7}t_{J_{13},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^I|\hat{g}|0^K 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_7}t_{J_{13},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|0^I 0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_7}t_{I_7,J_{13}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^I|\hat{g}|0^K 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_7}t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_{13},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_{11},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^J|\hat{g}|0^I1^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},I_9}t_{J_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^K1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},I_9}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^J|\hat{g}|0^I1^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},K_{10}}t_{I_9,J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^K1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{12},K_{10}}t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{7},J_{13},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{8}}t_{I_{7},J_{13}} \end{split}$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I | \hat{g} | 1^K 1^J \rangle \langle A_{14} | \hat{0}^+_\beta | A_1 \rangle \langle I_7 | \hat{0}^-_\beta | I_0 \rangle \langle J_{13} | \hat{1}^+_\beta | J_0 \rangle \langle K_8 | \hat{1}^-_\beta | K_0 \rangle t_{B_1} t_{A_{14}, K_8} t_{I_7, J_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_{13},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{10},J_{11},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{9}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{9}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{8},J_{13},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{13},K_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{7}}t_{I_{8},J_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{14},K_{7}}t_{I_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_{13},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|1^I 0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{10},J_{11},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{12},K_{10}}t_{I_{10},J_{11}} \end{split}$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{A} 1^{I} | \hat{g} | 1^{K} 1^{J} \rangle \langle A_{12} | \hat{0}_{\alpha}^{+} | A_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{B_{1}} t_{A_{12}, K_{10}} t_{I_{10}, J_{11}} dt_{A_{12}, K_{10}} dt_{A_{12}, K_{10}, K_{10}} dt_{A_{12}, K_{10}, K_{10}, K_{10}} dt_{A_{12}, K_{10}, K_{10}, K_{10}, K_{10}} dt_{A_{12}, K_{10}, K_{10}, K_{10}, K_{10}} dt_{A_{12}, K_{10}, K$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_{13},K_8)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|1^I 1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_{13},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|1^K 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|1^I 1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_8}t_{I_8,J_{13}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|1^K 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_8}t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_{13},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^J|\hat{g}|1^I1^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{12},I_{10}}t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_{12},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_{12},K_9} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_{12},K_9} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},K_9} t_{I_9,J_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},K_9} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{7},J_{14},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{14},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{14},K_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{7},J_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{7},J_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{7},J_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{13}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{14}|\hat{0}_{\beta}^{-}|K_{0}\rangle\langle I_{14}|\hat{0}_{\beta}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_9, J_{14}, K_7)\rangle =$$

$$+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{A} 0^{J} | \hat{g} | 0^{I} 0^{K} \rangle \langle A_{11} | \hat{1}^{+}_{\alpha} | A_{1} \rangle \langle I_{9} | \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{14} | \hat{0}^{+}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{B_{1}} t_{A_{11}, I_{9}} t_{J_{14}, K_{7}} dt_{A_{11}, I_{11}, I_{12}} dt_{A_{11}, I_{12}} dt_{A_{11}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{9},J_{12},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{12},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{9},J_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{9},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{7},J_{14},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{7},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{7},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_{14},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|0^I 1^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{10},J_{12},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{12},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{12},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{10},J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{10},J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_8, J_{14}, K_7)\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{14},K_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{14},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{8},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{8},J_{14}}\\ \end{aligned}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_{10}, J_{14}, K_7)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A 0^J|\hat{g}|1^I 0^K\rangle \langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle \langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle \langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{11},I_{10}}t_{J_{14},K_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{10},J_{12},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{12},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{10},J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_{14},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|1^I1^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},I_8}t_{J_{14},K_8}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^K0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},I_8}t_{J_{14},K_8}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|1^I1^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},K_8}t_{I_8,J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^K0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},K_8}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{10},J_{14},K_8)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|1^I1^K\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{11},I_{10}}t_{J_{14},K_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_9, J_{11}, K_9)\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{9},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{7},J_{13},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{13},K_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{7},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{7},J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_9, J_{13}, K_7)\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_{11}|\hat{1}^+_{\alpha} |A_1\rangle \langle I_9|\hat{0}^-_{\alpha} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle \langle K_7|\hat{0}^-_{\beta} |K_0\rangle t_{B_1} t_{A_{11}, I_9} t_{J_{13}, K_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{9},J_{11},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{9},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{7},J_{13},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{7},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{7},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_{13},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{10},J_{11},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{9}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{8},J_{13},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{13},K_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{8},J_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{7}}t_{I_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{10},J_{13},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I0^K\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{11},I_{10}}t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{10},J_{11},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{11},K_{10}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{8},J_{13},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{13},K_{8}}t_{I_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{10},J_{13},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I1^K\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{B_1}t_{A_{11},I_{10}}t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_7,J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_9} t_{I_7,J_{14}} \rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_8,J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^K 0^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_9} t_{I_8,J_{14}} \rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle I_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle I_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle I_0\rangle \langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_7,J_{14},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 0^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1} t_{A_{12},K_{10}} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_8,J_{14},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^A 1^I |\hat{g}|1^K 0^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{12},K_{10}} t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_7,J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_9} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_8,J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_9} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_7,J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_{10}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_8,J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|1^K 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{12},K_{10}} t_{I_8,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_7, J_{14}, K_9)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I | \hat{g} | 0^K 0^J \rangle \langle A_{11} | \hat{1}^+_{\alpha} | A_1 \rangle \langle I_7 | \hat{0}^-_{\beta} | I_0 \rangle \langle J_{14} | \hat{0}^+_{\beta} | J_0 \rangle \langle K_9 | \hat{0}^-_{\alpha} | K_0 \rangle t_{B_1} t_{A_{11}, K_9} t_{I_7, J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_8,J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^K 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{11},K_9} t_{I_8,J_{14}} \rangle \langle I_8|\hat{1}^+_{\beta}|I_0 \rangle \langle I_8|\hat{1}^+_{\beta}|I_0 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle I_1 |I_1 \rangle \langle I_1 \rangle \langle I_1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_7,J_{14},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^K 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1} t_{A_{11},K_{10}} t_{I_7,J_{14}} \rangle \langle I_7|\hat{0}^+_{\beta}|I_0\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle I_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1} t_{A_{11},K_{10}} t_{I_7,J_{14}} \rangle \langle I_7|\hat{0}^+_{\beta}|I_0\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle I_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1} t_{A_{11},K_{10}} t_{I_7,J_{14}} \rangle \langle I_7|\hat{0}^+_{\beta}|I_0\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle I_{11}|\hat{1}^-_{\alpha}|I_0\rangle \langle I_1|\hat{1}^-_{\alpha}|I_0\rangle \langle I_1|I_0\rangle \langle$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_8, J_{14}, K_{10})\rangle =$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I | \hat{g} | 1^K 0^J \rangle \langle A_{11} | \hat{1}^+_\alpha | A_1 \rangle \langle I_8 | \hat{1}^-_\beta | I_0 \rangle \langle J_{14} | \hat{0}^+_\beta | J_0 \rangle \langle K_{10} | \hat{1}^-_\alpha | K_0 \rangle t_{B_1} t_{A_{11}, K_{10}} t_{I_8, J_{14}} \rangle \langle I_8 | \hat{I}^-_\beta | I_0 \rangle \langle I_{14} | \hat{0}^+_\beta | I_0 \rangle \langle I_{10} | \hat{I}^-_\alpha | I_0 \rangle \langle I_{10} | \hat{I}^-_\alpha | I_0 \rangle \langle I_{10} | \hat{I}^-_\alpha | I_0 \rangle \langle I_{11} | \hat{I}^-_\alpha | I_0 \rangle \langle I_{12} | \hat{I}^-_\alpha | I_0 \rangle \langle I_0 | I_0 \rangle \langle I_0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_7,J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{B_1} t_{A_{11},K_9} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_8,J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},K_9} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_7,J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^K 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1} t_{A_{11},K_{10}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_8,J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^K 1^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{11},K_{10}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{9},J_{9},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{9},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{9},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{9},K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{9},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{7},J_{7},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{7},K_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{7},K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_7,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_7,K_{14}} \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\beta}^- |I_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_7,K_{14}} \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\beta}^- |I_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_7,K_{14}} \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\beta}^- |I_0\rangle \langle I_0|\hat{0}_{\beta}^- |I_0\rangle \langle I_0|\hat{$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|0^I 0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{B_1}t_{A_{12},I_9}t_{J_{10},K_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^I|\hat{g}|1^J 0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{B_1}t_{A_{12},I_9}t_{J_{10},K_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|0^I 0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_9,K_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^I|\hat{g}|1^J 0^K\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{B_1}t_{A_{12},J_{10}}t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{7},J_{8},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{8},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{8},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{7},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{7},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{7},K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_8,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_8,K_{14}} \rangle \langle I_8|\hat{0}_{\alpha}^+ |I_0\rangle \langle$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{10},J_{9},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{9},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{9},K_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_7,K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^J0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_8,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^J0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_7,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},I_{10}} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{10},J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{10},K_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{10},K_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{10},K_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_8,K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^J|\hat{g}|1^I0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_8,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^J0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_8,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^J|\hat{g}|1^I0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_8,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^J0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_8,K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_1, I_{10}, J_8, K_{14})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_{12}| \hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0\rangle \langle J_8| \hat{1}_{\beta}^- |J_0\rangle \langle K_{14}| \hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12}, I_{10}} t_{J_8, K_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{9},J_{9},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{9},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{9},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{9},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{9},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{7},J_{7},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{7},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{7},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{7},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{7}}t_{I_{7},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_7,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 1^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{9},J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{9}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{9},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{9},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{7},J_{8},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{7}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{7},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{7},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_9,J_8,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},I_9} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{10},J_{9},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{9},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{9},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{10},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{9}}t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_7,K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_7,K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^J1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_7,K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_8,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^J1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{14},J_7}t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_7,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},I_{10}} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{1},I_{10},J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},I_{10}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{10},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{12},J_{10}}t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{1},I_{8},J_{8},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{8},K_{13}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{14},I_{8}}t_{J_{8},K_{13}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{8},K_{13}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{14},J_{8}}t_{I_{8},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_{10},J_8,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 1^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},I_{10}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_9,K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|0^I0^K\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^J0^K\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{11},I_9}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|0^I0^K\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{11},J_9}t_{I_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^J0^K\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{11},J_9}t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{7},J_{7},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{7},K_{14}} \end{split}$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{A} 0^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle A_{13} | \hat{1}^{+}_{\beta} | A_{1} \rangle \langle I_{7} | \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle t_{B_{1}} t_{A_{13}, J_{7}} t_{I_{7}, K_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_7,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_7,K_{14}} \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\beta}^- |I_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_7,K_{14}} \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\beta}^- |I_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_7,K_{14}} \rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\beta}^- |I_0\rangle \langle I_0|\hat{0}_{\beta}^- |I_0\rangle \langle I_0|\hat{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{9},J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{10},K_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{10},K_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{9},K_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{9},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7,J_8,K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_8,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^J0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_8,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_7,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^J0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{13},J_8}t_{I_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_8,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}| 0^I 0^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_8,K_{14}} \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle I_9|\hat{0}^-_{\beta}|I_0\rangle \langle I_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_8,K_{14}} \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle I_9|\hat{0}^-_{\beta}|I_0\rangle \langle I_0|I_0\rangle \langle I_0|I$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{10},J_{9},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{9},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{9},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{10},K_{12}} \end{split}$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{A} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle A_{11} | \hat{1}^{+}_{\alpha} | A_{1} \rangle \langle I_{10} | \hat{1}^{-}_{\alpha} | I_{0} \rangle \langle J_{9} | \hat{0}^{-}_{\alpha} | J_{0} \rangle \langle K_{12} | \hat{0}^{+}_{\alpha} | K_{0} \rangle t_{B_{1}} t_{A_{11}, J_{9}} t_{I_{10}, K_{12}} dt_{A_{12}, J_{12}} dt_{A_{12}, J_{12}, K_{12}} dt_{A_{12}, J_{12}, K_{12}} dt_{A_{12}, J_{12}, K_{12}} dt_{A_{12}, J_{12}, K_{12}, K_{12}} dt_{A_{12}, J_{12}, K_{12}, K_{$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{8},J_{7},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{8},K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_{10}, J_7, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J | \hat{g} | 1^I 0^K \rangle \langle A_{11} | \hat{1}_{\alpha}^+ | A_1 \rangle \langle I_{10} | \hat{1}_{\alpha}^- | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^- | J_0 \rangle \langle K_{14} | \hat{0}_{\beta}^+ | K_0 \rangle t_{B_1} t_{A_{11}, I_{10}} t_{J_7, K_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{10},J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{10},K_{12}}t_{A_{11}}t_{A_{11},I_{10},I_{10},I_{10}}t_{A_{11},I_{10},I_{10},I_{10}}t_{A_{11},I_{10},I_{10},I_{10}}t_{A_{11},I_{10},I_{10},I_{10},I_{10}}t_{A_{11},I_{10},I_{10},I_{10},I_{10}}t_{A_{11},I_{10},I_$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{8},J_{8},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{8},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{8},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{A_{14},J_{14}} \\ &+ \frac{-1}{12}\sum_{K}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{18}|1^{J}0^{K}\rangle\langle A_$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_{10}, J_8, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{A} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle A_{11} | \hat{1}_{\alpha}^{+} | A_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{11}, I_{10}} t_{J_{8}, K_{14}} | \hat{I}_{12}^{+} | K_{12} \rangle \langle I_{12} | \hat{I}_{12}^{+} | K_{12} | K_{12} \rangle \langle I_{12} | \hat{I}_{12}^{+} | K_{12} \rangle \langle I_{12} | \hat{I}_{12}^{+} | K_{12} \rangle \langle I_{12} | K_{1$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{9},J_{9},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{9},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{9},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{7},J_{7},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{7},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{7},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{7},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{7},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_7,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|0^I 1^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{9},J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{9}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{9},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{9},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_7, J_8, K_{13})\rangle =$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{7}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{7},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_9,J_8,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},I_9} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{1},I_{10},J_{9},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{9},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{9},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}t_{I_{10},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{9}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{8},J_{7},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{7},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{7},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{8},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{7}}t_{I_{8},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{10},J_7,K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|1^I1^K\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{11},I_{10}}t_{J_7,K_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_{10}, J_{10}, K_{11})\rangle =$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},I_{10}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{11},J_{10}}t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{1},I_{8},J_{8},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},I_{8}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{8},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{8},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{13},J_{8}}t_{I_{8},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_{10},J_8,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}| 1^I 1^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},I_{10}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_7,J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{I_7,K_{14}} \rangle \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{I_7,K_{14}} \rangle \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{I_7,K_{14}} \rangle \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{I_7,K_{14}} \rangle \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{I_7,K_{14}} \rangle \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{A_12} \zeta_{A_12} \zeta_{A_12}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_8,J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_7,J_{10},K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1} t_{A_{12},J_{10}} t_{I_7,K_{14}} \rangle \langle I_1|\hat{0}^+_{\beta}|I_0\rangle \langle I_1|I_0\rangle \langle I_0|I_0\rangle \langle I_0|I_0$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_1, I_8, J_{10}, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I | \hat{g} | 1^J 0^K \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle \langle K_{14} | \hat{0}_{\beta}^+ | K_0 \rangle t_{B_1} t_{A_{12}, J_{10}} t_{I_8, K_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_7,J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_8,J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{12},J_9} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_1,I_7,J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^J 1^K \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_{12},J_{10}} t_{I_7,K_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_1, I_8, J_{10}, K_{13})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I | \hat{g} | 1^J 1^K \rangle \langle A_{12} | \hat{0}_{\alpha}^+ | A_1 \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle \langle K_{13} | \hat{1}_{\beta}^+ | K_0 \rangle t_{B_1} t_{A_{12}, J_{10}} t_{I_8, K_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_7,J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},J_9} t_{I_7,K_{14}} \rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},J_9} t_{I_7,K_{14}} \rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\beta}^- |I_0\rangle \langle I_0|\hat{0}_{\beta}^- |I_0\rangle \langle I_0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_8,J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},J_9} t_{I_8,K_{14}} \rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |J_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},J_9} t_{I_8,K_{14}} \rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},J_9} t_{I_8,K_{14}} \rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\beta}^- |I_0\rangle \langle I_9|\hat{0}_{\beta}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle I_9|\hat{0}_{\beta}^- |I_0\rangle \langle I_0|\hat{0}_{\beta}^- |I_0\rangle \langle I_0|\hat{$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_1, I_7, J_{10}, K_{14})\rangle =$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I | \hat{g} | 1^J 0^K \rangle \langle A_{11} | \hat{1}^+_\alpha | A_1 \rangle \langle I_7 | \hat{0}^-_\beta | I_0 \rangle \langle J_{10} | \hat{1}^-_\alpha | J_0 \rangle \langle K_{14} | \hat{0}^+_\beta | K_0 \rangle t_{B_1} t_{A_{11}, J_{10}} t_{I_7, K_{14}} \rangle dt_{B_1} t_{A_{11}, J_{10}} t_{I_7, K_{14}} dt_{B_1} dt_{A_{11}, J_{10}} dt_{A_{11}, J_{10}, J_{10}} dt_{A_{11}, J_{10}, J_{10}} dt_{A_{11}, J_{10}, J_{10}, J_{10}} dt_{A_{11}, J_{10}, J_{10}, J_{10}, J_{10}} dt_{A_{11}, J_{10}, J_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_8,J_{10},K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 0^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_8,K_{14}} \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle I_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_8,K_{14}} \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle I_0 \rangle \langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_7,J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},J_9} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_8,J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_{11},J_9} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_7,J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 1^K \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_{11},J_{10}} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_1,I_8,J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 1^K \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{11},J_{10}} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{12},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_{14} |\hat{0}_{\beta}^+|A_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+|I_0\rangle \langle J_9 |\hat{0}_{\alpha}^-|J_0\rangle \langle K_7 |\hat{0}_{\beta}^-|K_0\rangle t_{B_1} t_{A_{14},K_7} t_{I_{12},J_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_{12}, J_9, K_8)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^I|\hat{g}|1^K 0^J\rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14}, K_8}t_{I_{12}, J_9}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{12},J_{10},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^K1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_7}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{12},J_{10},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{K}\langle 0^A0^I|\hat{g}|1^K1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_8}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{12},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{13},K_7} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{12},J_9,K_8)\rangle = \\ &+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^K 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{13},K_8} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{12},J_{10},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{13},K_7} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{12},J_{10},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^A 0^I |\hat{g}|1^K 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{13},K_8} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{11},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^K 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{14},K_7} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{11},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 1^K 0^J \rangle \langle A_{14} |\hat{0}_{\beta}^+ |A_1\rangle \langle I_{11} |\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9 |\hat{0}_{\alpha}^- |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{14},K_8} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{11},J_{10},K_7)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^K1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_7}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{11},J_{10},K_8)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{K}\langle 0^A 1^I|\hat{g}|1^K 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{14},K_8}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{11},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^K 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{13},K_7} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{11},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^I |\hat{g}|1^K 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{13},K_8} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{11},J_{10},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^K1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},K_7}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{11},J_{10},K_8)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{K}\langle 1^A1^I|\hat{g}|1^K1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},K_8}t_{I_{11},J_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_{12}, J_7, K_9)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^I|\hat{g}|0^J 0^K\rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_{14}, J_7}t_{I_{12}, K_9}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{12},J_8,K_9)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^J0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{12},J_7,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{14},J_7} t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{12},J_8,K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^J1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_{12},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_{12}, J_7, K_9)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A 0^I|\hat{g}|0^J 0^K\rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_{13}, J_7}t_{I_{12}, K_9}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{12},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_{13}|\hat{1}^+_\beta |A_1\rangle \langle I_{12}|\hat{0}^+_\alpha |I_0\rangle \langle J_8|\hat{1}^-_\beta |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle t_{B_1} t_{A_{13},J_8} t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{12},J_7,K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^J1^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_{13},J_7}t_{I_{12},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_{12}, J_8, K_{10})\rangle =$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I | \hat{g} | 1^J 1^K \rangle \langle A_{13} | \hat{1}^+_\beta | A_1 \rangle \langle I_{12} | \hat{0}^+_\alpha | I_0 \rangle \langle J_8 | \hat{1}^-_\beta | J_0 \rangle \langle K_{10} | \hat{1}^-_\alpha | K_0 \rangle t_{B_1} t_{A_{13},J_8} t_{I_{12},K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{11},J_7,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_{14} |\hat{0}_{\beta}^+ |A_1\rangle \langle I_{11} |\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_9 |\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{14},J_7} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{11},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 1^J 0^K \rangle \langle A_{14} |\hat{0}_{\beta}^+ |A_1\rangle \langle I_{11} |\hat{1}_{\alpha}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_9 |\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{14},J_8} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{11},J_7,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_{14} |\hat{0}^+_{\beta}|A_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha}|I_0 \rangle \langle J_7 |\hat{0}^-_{\beta}|J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{14},J_7} t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{11},J_8,K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^J1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{11},J_7,K_9)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^J0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_{13},J_7}t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{11},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 0^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_8} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{11},J_7,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_7} t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{11},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_8} t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{12},J_{12},K_{9})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{12},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{12},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{12},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{12},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{14},J_{14},K_{7})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{14},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{14},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{14},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{14},K_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{12},J_{14},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{12} |\hat{0}_\alpha^+ |I_0\rangle \langle J_{14} |\hat{0}_\beta^+ |J_0\rangle \langle K_7 |\hat{0}_\beta^- |K_0\rangle t_{B_1} t_{A_9,I_{12}} t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{12},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{12},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|0^I1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_{14},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^J1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_{14},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|0^I1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_7,J_{14}}t_{I_{14},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^J1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_7,J_{14}}t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{12},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 1^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{12} |\hat{0}_\alpha^+ |I_0\rangle \langle J_{14} |\hat{0}_\beta^+ |J_0\rangle \langle K_8 |\hat{1}_\beta^- |K_0\rangle t_{B_1} t_{A_9,I_{12}} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{12},J_{12},K_{9})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{12},K_{9}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{12},K_{9}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{12},K_{9}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{12},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_{14},K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|0^I0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^J0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|0^I0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_{14},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^J0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_{14},K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|0^I0^K\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{12},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{12},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{14},J_{14},K_{8})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{14},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{14},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{14},K_{8}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{14},K_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}| 0^I 1^K \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{10},I_{12}} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{12},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|0^I 0^K\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_{11},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^I|\hat{g}|1^J 0^K\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_9,I_{12}}t_{J_{11},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|0^I 0^K\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_9,J_{11}}t_{I_{12},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^I|\hat{g}|1^J 0^K\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_9,J_{11}}t_{I_{12},K_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_1, I_{14}, J_{13}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle \langle K_7 |\hat{0}^-_{\beta} |K_0\rangle t_{B_1} t_{A_7, I_{14}} t_{J_{13}, K_7}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{14},K_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{14},K_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{12}, J_{13}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0\rangle \langle K_7 |\hat{0}_{\beta}^- |K_0\rangle t_{B_1} t_{A_9, I_{12}} t_{J_{13}, K_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{12},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{11},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{11},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{12},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{14},J_{13},K_{8})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{14},K_{8}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{14},K_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{12},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{12} |\hat{0}_\alpha^+ |I_0\rangle \langle J_{13} |\hat{1}_\beta^+ |J_0\rangle \langle K_8 |\hat{1}_\beta^- |K_0\rangle t_{B_1} t_{A_9,I_{12}} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{10},I_{12}} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{12},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{12},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{14},J_{13},K_{7})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{14},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{14},K_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_{13},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{10},I_{12}} t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{12},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{11},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{11},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{12},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^J1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_{14},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^J1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I1^K\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{11},J_{12},K_{9})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{12},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{12},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{11},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{11},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{13},J_{14},K_{7})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{14},K_{7}}t_{I_{12}}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{14},K_{7}}t_{I_{12}}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{13},K_{7}}t_{I_{12}}+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{13},K_{7}}t_{I_{13},K_{7}}t_{I_{12},K_{7}}t_{I_{12},K_{7}}t_{I_{12},K_{7}}t_{I_{12},K_{7},I_{13},K_{7},I_{14},I_{14},K_{7},I_{14},I_{14},K_{7},I_{14},I_{14},I_{14},I_{14},K_{7},I_{14},I_{14},I_{14},I_{14},I_{14},I_{14},I_{14},I_{14},I_{14},I_{14},I_{14},I_{14$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_{14},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{11} |\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_7 |\hat{0}_{\beta}^- |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I1^K\rangle\langle A_9|\hat{0}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^J1^K\rangle\langle A_9|\hat{0}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I1^K\rangle\langle A_9|\hat{0}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_9,J_{12}}t_{I_{11},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^J1^K\rangle\langle A_9|\hat{0}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_9,J_{12}}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_7,I_{13}}t_{J_{14},K_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^J1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_7,I_{13}}t_{J_{14},K_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_7,J_{14}}t_{I_{13},K_8} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^J1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_7,J_{14}}t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{11} |\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{11},J_{12},K_{9})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{12},K_{9}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{12},K_{9}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{11},K_{9}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{11},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_{14},K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|1^I0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^J0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|1^I0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_{13},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^J0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11},J_{14},K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|1^I0^K\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{10},I_{11}}t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{11},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{11},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{13},J_{14},K_{8})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{14},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{14},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{13},K_{8}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{13},K_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|1^I 1^K \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{10},I_{11}} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{11},J_{11},K_{9})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{11},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{11},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{11},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{11},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{13},J_{13},K_{7})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle \langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle \langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle \langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle \langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle \langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{13},K_{7}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{13},K_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{13},K_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_{13},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{11} |\hat{1}_\alpha^+ |I_0\rangle \langle J_{13} |\hat{1}_\beta^+ |J_0\rangle \langle K_7 |\hat{0}_\beta^- |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{11},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{11},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{13},J_{13},K_{8})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{13}}t_{J_{13},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{13},K_{8}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{13},K_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I0^K\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{10},I_{11}}t_{J_{11},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J0^K\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{B_1}t_{A_{10},I_{11}}t_{J_{11},K_9} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{11},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_{13},K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_{13},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_{13},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_{13},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11},J_{13},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|1^I 0^K \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{10},I_{11}} t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{11},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{11},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{11},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{11},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_{13},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}| 1^I 1^K \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_{10},I_{11}} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{12},J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_7,J_{14}} t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{12},J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle t_{B_1} t_{A_8,J_{14}} t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{12},J_{14},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_7,J_{14}} t_{I_{12},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_1, I_{12}, J_{14}, K_{10})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I | \hat{g} | 0^J 1^K \rangle \langle A_8 | \hat{1}^-_{\beta} | A_1 \rangle \langle I_{12} | \hat{0}^+_{\alpha} | I_0 \rangle \langle J_{14} | \hat{0}^+_{\beta} | J_0 \rangle \langle K_{10} | \hat{1}^-_{\alpha} | K_0 \rangle t_{B_1} t_{A_8, J_{14}} t_{I_{12}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{12},J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^J 0^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_7,J_{13}} t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{12},J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_8 |\hat{1}^-_\beta |A_1\rangle \langle I_{12} |\hat{0}^+_\alpha |I_0\rangle \langle J_{13} |\hat{1}^+_\beta |J_0\rangle \langle K_9 |\hat{0}^-_\alpha |K_0\rangle t_{B_1} t_{A_8,J_{13}} t_{I_{12},K_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_1, I_{12}, J_{13}, K_{10})\rangle =$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I | \hat{g} | 1^J 1^K \rangle \langle A_7 | \hat{0}^-_\beta | A_1 \rangle \langle I_{12} | \hat{0}^+_\alpha | I_0 \rangle \langle J_{13} | \hat{1}^+_\beta | J_0 \rangle \langle K_{10} | \hat{1}^-_\alpha | K_0 \rangle t_{B_1} t_{A_7, J_{13}} t_{I_{12}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{12},J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 0^I |\hat{g}|1^J 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{12}|\hat{0}^+_{\alpha} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,J_{13}} t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{11},J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_7,J_{14}} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{11},J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle t_{B_1} t_{A_8,J_{14}} t_{I_{11},K_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_1, I_{11}, J_{14}, K_{10})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I | \hat{g} | 0^J 1^K \rangle \langle A_7 | \hat{0}^-_{\beta} | A_1 \rangle \langle I_{11} | \hat{1}^+_{\alpha} | I_0 \rangle \langle J_{14} | \hat{0}^+_{\beta} | J_0 \rangle \langle K_{10} | \hat{1}^-_{\alpha} | K_0 \rangle t_{B_1} t_{A_7, J_{14}} t_{I_{11}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{11},J_{14},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,J_{14}} t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{11},J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|1^J 0^K \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_7,J_{13}} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{11},J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,J_{13}} t_{I_{11},K_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_1, I_{11}, J_{13}, K_{10})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I | \hat{g} | 1^J 1^K \rangle \langle A_7 | \hat{0}^-_{\beta} | A_1 \rangle \langle I_{11} | \hat{1}^+_{\alpha} | I_0 \rangle \langle J_{13} | \hat{1}^+_{\beta} | J_0 \rangle \langle K_{10} | \hat{1}^-_{\alpha} | K_0 \rangle t_{B_1} t_{A_7, J_{13}} t_{I_{11}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{11},J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^I |\hat{g}|1^J 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,J_{13}} t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{12},J_{9},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{12}}t_{I_{12},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{12}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{14},J_{7},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{14},J_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{12},J_7,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_9,I_{12}} t_{J_7,K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{12}, J_{10}, K_{12})\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{12}}t_{I_{12},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{12}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{14},J_{8},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{8},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},I_{14}}t_{J_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{14},J_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{14},J_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{12}, J_8, K_{14})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|0^I 0^K\rangle \langle A_9|\hat{0}_{\alpha}^-|A_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle \langle J_8|\hat{1}_{\beta}^-|J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+|K_0\rangle t_{B_1}t_{A_9, I_{12}}t_{J_8, K_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{12},J_{9},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{12},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{14},J_{7},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{14}}t_{I_{14},J_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{14}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_7,K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|0^I0^K\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^+|K_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{12},J_{10},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{12},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_8,K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_8,K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^K1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_8,K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{14}}t_{I_{14},J_8}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^K1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{14}}t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_8,K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I0^K\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^+|K_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{12},J_{9},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{9},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{12},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_7,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 1^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{14}} t_{J_7,K_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|1^K 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{14}} t_{J_7,K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 1^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{14},J_7} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|1^K 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{14},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{12}, J_7, K_{13})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^J|\hat{g}|0^I 1^K\rangle \langle A_9|\hat{0}_{\alpha}^-|A_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle \langle J_7|\hat{0}_{\beta}^-|J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{B_1}t_{A_9, I_{12}}t_{J_7, K_{13}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{12},J_{10},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{12}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{12},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_8,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{14}} t_{J_8,K_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|1^K 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{14}} t_{J_8,K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{14},J_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|1^K 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{12},J_8,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_9,I_{12}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{12},J_{9},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{9},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{9},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{12},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{14},J_{7},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{7},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{14},J_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_7,K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|0^I1^K\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{12},J_{10},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{12}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{12},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_8,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0\rangle t_{B_1} t_{A_8,I_{14}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{14}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{14},J_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{12},J_8,K_{13})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I1^K\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{B_1}t_{A_{10},I_{12}}t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_9,K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I0^K\rangle\langle A_9|\hat{0}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_9,K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^K0^J\rangle\langle A_9|\hat{0}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_9,K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|1^I0^K\rangle\langle A_9|\hat{0}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_9,K_{12}}t_{I_{11},J_9} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^K0^J\rangle\langle A_9|\hat{0}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_9,K_{12}}t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_7,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 0^K 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{14}} t_{I_{13},J_7} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 0^K 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{14}} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_7,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{11}|\hat{1}_\alpha^+ |I_0\rangle \langle J_7 |\hat{0}_\beta^- |J_0\rangle \langle K_{14}|\hat{0}_\beta^+ |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{11}|\hat{1}_\alpha^+ |I_0\rangle \langle J_7 |\hat{0}_\beta^- |J_0\rangle \langle K_{14}|\hat{0}_\beta^+ |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{11}|\hat{1}_\alpha^+ |I_0\rangle \langle J_7 |\hat{0}_\beta^- |J_0\rangle \langle K_{14}|\hat{0}_\beta^+ |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{11}|\hat{1}_\alpha^+ |I_0\rangle \langle J_7 |\hat{0}_\beta^- |J_0\rangle \langle K_{14}|\hat{0}_\beta^+ |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{11}|\hat{1}_\alpha^+ |I_0\rangle \langle J_7 |\hat{0}_\beta^- |J_0\rangle \langle K_{14}|\hat{0}_\beta^+ |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_7,K_{14}} \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{11}|\hat{1}_\alpha^+ |I_0\rangle \langle I_1 |\hat{0}_\beta^- |A_1\rangle \langle I_1 |\hat{0}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_{10},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|1^I 0^K\rangle\langle A_9|\hat{0}^-_{\alpha}|A_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_9,I_{11}}t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{10},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{12}}t_{I_{11},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{12}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_8,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_8,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 0^K 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_8,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{14}} t_{I_{13},J_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 0^K 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{14}} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_8,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{11}|\hat{1}_\alpha^+ |I_0\rangle \langle J_8|\hat{1}_\beta^- |J_0\rangle \langle K_{14}|\hat{0}_\beta^+ |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{11},J_{9},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{11},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{13},J_{7},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{7},K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{14}}t_{I_{13},J_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{14}}t_{I_{13},J_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_{11}, J_7, K_{14})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{10}, I_{11}} t_{J_7, K_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{11},J_{10},K_{12})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{10},K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{10},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{11},J_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_8,K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_8,K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^K1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_8,K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{14}}t_{I_{13},J_8}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^K1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{14}}t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11},J_8,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{10},I_{11}} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_9,K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9 |\hat{0}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 1^K 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9 |\hat{0}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_9,K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9 |\hat{0}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,K_{11}} t_{I_{11},J_9} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 1^K 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_9 |\hat{0}_{\alpha}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,K_{11}} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_7,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_7,K_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 1^K 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_7,K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{13},J_7} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 1^K 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_7,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{11},J_{10},K_{11})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{10},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},I_{11}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{11},J_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_8,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|1^I 1^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_8,K_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|1^K 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_8,K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|1^I 1^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{13},J_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|1^K 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{11},J_8,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_9,I_{11}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{11},J_{9},K_{11})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{9},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{11},J_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{13},J_{7},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{7},K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{13},J_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{13},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11},J_7,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|1^I 1^K \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{10},I_{11}} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{11},J_{10},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},I_{11}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{11},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{13},J_{8},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{8},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},I_{13}}t_{J_{8},K_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{13},J_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{11},J_8,K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I1^K\rangle\langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{B_1}t_{A_{10},I_{11}}t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{12},J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_7,K_{14}} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{12},J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_8,K_{14}} t_{I_{12},J_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_1, I_{12}, J_{10}, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I | \hat{g} | 0^K 1^J \rangle \langle A_7 | \hat{0}^-_{\beta} | A_1 \rangle \langle I_{12} | \hat{0}^+_{\alpha} | I_0 \rangle \langle J_{10} | \hat{1}^-_{\alpha} | J_0 \rangle \langle K_{14} | \hat{0}^+_{\beta} | K_0 \rangle t_{B_1} t_{A_7, K_{14}} t_{I_{12}, J_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{12},J_{10},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^K1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{14}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{12},J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 0^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{12},J_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_1, I_{12}, J_9, K_{13})\rangle =$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I | \hat{g} | 1^K 0^J \rangle \langle A_8 | \hat{1}^-_\beta | A_1 \rangle \langle I_{12} | \hat{0}^+_\alpha | I_0 \rangle \langle J_9 | \hat{0}^-_\alpha | J_0 \rangle \langle K_{13} | \hat{1}^+_\beta | K_0 \rangle t_{B_1} t_{A_8, K_{13}} t_{I_{12}, J_9}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_1, I_{12}, J_{10}, K_{13})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I | \hat{g} | 1^K 1^J \rangle \langle A_7 | \hat{0}^-_{\beta} | A_1 \rangle \langle I_{12} | \hat{0}^+_{\alpha} | I_0 \rangle \langle J_{10} | \hat{1}^-_{\alpha} | J_0 \rangle \langle K_{13} | \hat{1}^+_{\beta} | K_0 \rangle t_{B_1} t_{A_7, K_{13}} t_{I_{12}, J_{10}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_1, I_{12}, J_{10}, K_{13})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I | \hat{g} | 1^K 1^J \rangle \langle A_8 | \hat{1}^-_{\beta} | A_1 \rangle \langle I_{12} | \hat{0}^+_{\alpha} | I_0 \rangle \langle J_{10} | \hat{1}^-_{\alpha} | J_0 \rangle \langle K_{13} | \hat{1}^+_{\beta} | K_0 \rangle t_{B_1} t_{A_8, K_{13}} t_{I_{12}, J_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{11},J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^K 0^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta} |K_0 \rangle t_{B_1} t_{A_7,K_{14}} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{11},J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^I |\hat{g}|0^K 0^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta} |K_0 \rangle t_{B_1} t_{A_8,K_{14}} t_{I_{11},J_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_1, I_{11}, J_{10}, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I | \hat{g} | 0^K 1^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle \langle K_{14} | \hat{0}_{\beta}^+ | K_0 \rangle t_{B_1} t_{A_7, K_{14}} t_{I_{11}, J_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{11},J_{10},K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_8 |\hat{1}^-_\beta |A_1\rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_{14}|\hat{0}^+_\beta |K_0\rangle t_{B_1} t_{A_8,K_{14}} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{11},J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 1^K 0^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{11},J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^I |\hat{g}|1^K 0^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle t_{B_1} t_{A_8,K_{13}} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{11},J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|1^K 1^J \rangle \langle A_7 |\hat{0}^-_\beta |A_1\rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_{13}|\hat{1}^+_\beta |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{11},J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^I |\hat{g}|1^K 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle \langle K_{13}|\hat{1}^+_{\beta} |K_0\rangle t_{B_1} t_{A_8,K_{13}} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_9,J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{14},K_7} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_9,J_{12},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 0^J \rangle \langle A_{14} |\hat{0}^+_{\beta}| A_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}| I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}| J_0 \rangle \langle K_8 |\hat{1}^-_{\beta}| K_0 \rangle t_{B_1} t_{A_{14},K_8} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{10},J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^K 0^J \rangle \langle A_{14}|\hat{0}^+_\beta |A_1\rangle \langle I_{10}|\hat{1}^-_\alpha |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_7|\hat{0}^-_\beta |K_0\rangle t_{B_1} t_{A_{14},K_7} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{10},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|1^K 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{14},K_8} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_9,J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{13},K_7} t_{I_9,J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_9, J_{12}, K_8)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}| 1^K 0^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1\rangle \langle I_9| \hat{0}^-_{\alpha} |I_0\rangle \langle J_{12}| \hat{0}^+_{\alpha} |J_0\rangle \langle K_8| \hat{1}^-_{\beta} |K_0\rangle t_{B_1} t_{A_{13}, K_8} t_{I_9, J_{12}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_{10}, J_{12}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I | \hat{g} | 0^K 0^J \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle I_{10} | \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle \langle K_7 | \hat{0}^-_{\beta} | K_0 \rangle t_{B_1} t_{A_{13}, K_7} t_{I_{10}, J_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{10},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^K0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{13},K_8}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_9,J_{11},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{14},K_7} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_9,J_{11},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1} t_{A_{14},K_8} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{10},J_{11},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_{14}|\hat{0}^+_\beta |A_1\rangle \langle I_{10}|\hat{1}^-_\alpha |I_0\rangle \langle J_{11}|\hat{1}^+_\alpha |J_0\rangle \langle K_7|\hat{0}^-_\beta |K_0\rangle t_{B_1} t_{A_{14},K_7} t_{I_{10},J_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_{10}, J_{11}, K_8)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I | \hat{g} | 1^K 1^J \rangle \langle A_{14} | \hat{0}^+_{\beta} | A_1 \rangle \langle I_{10} | \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle \langle K_8 | \hat{1}^-_{\beta} | K_0 \rangle t_{B_1} t_{A_{14}, K_8} t_{I_{10}, J_{11}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_9, J_{11}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle I_9|\hat{0}^-_{\alpha} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle \langle K_7|\hat{0}^-_{\beta} |K_0\rangle t_{B_1} t_{A_{13}, K_7} t_{I_9, J_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_9,J_{11},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}| 1^K 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle I_9|\hat{0}^-_{\alpha} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle \langle K_8|\hat{1}^-_{\beta} |K_0\rangle t_{B_1} t_{A_{13},K_8} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{10},J_{11},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{13},K_7} t_{I_{10},J_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_{10}, J_{11}, K_8)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I | \hat{g} | 1^K 1^J \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle I_{10} | \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle \langle K_8 | \hat{1}^-_{\beta} | K_0 \rangle t_{B_1} t_{A_{13}, K_8} t_{I_{10}, J_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_7,J_{12},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_{14} |\hat{0}^+_{\beta}|A_1 \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{14},I_7} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_{12},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_{14} |\hat{0}_{\beta}^+ |A_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{12} |\hat{0}_{\alpha}^+ |J_0\rangle \langle K_9 |\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{14},I_8} t_{J_{12},K_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_7, J_{12}, K_{10})\rangle =$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J | \hat{g} | 0^I 1^K \rangle \langle A_{14} | \hat{0}^+_\beta | A_1 \rangle \langle I_7 | \hat{0}^-_\beta | I_0 \rangle \langle J_{12} | \hat{0}^+_\alpha | J_0 \rangle \langle K_{10} | \hat{1}^-_\alpha | K_0 \rangle t_{B_1} t_{A_{14}, I_7} t_{J_{12}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_{12},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_{14} |\hat{0}^+_\beta |A_1\rangle \langle I_8 |\hat{1}^-_\beta |I_0\rangle \langle J_{12} |\hat{0}^+_\alpha |J_0\rangle \langle K_{10} |\hat{1}^-_\alpha |K_0\rangle t_{B_1} t_{A_{14},I_8} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7,J_{12},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{B_1} t_{A_{13},I_7} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_{12},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|1^I 0^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{B_1} t_{A_{13},I_8} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7,J_{12},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|0^I 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},I_7} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_{12},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|1^I1^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_{13},I_8}t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_7,J_{11},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_{14} |\hat{0}^+_{\beta}|A_1 \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{14},I_7} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_{11},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_{14} |\hat{0}_{\beta}^+ |A_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_9 |\hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{14},I_8} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_7,J_{11},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{14},I_7} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_{11},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{I}\sum_{K}\langle 0^A 1^J|\hat{g}|1^I 1^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{B_1}t_{A_{14},I_8}t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7,J_{11},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{B_1} t_{A_{13},I_7} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_{11},K_9)\rangle = \\ &+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_{13}| \hat{1}_{\beta}^+ |A_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_{11}| \hat{1}_{\alpha}^+ |J_0\rangle \langle K_9| \hat{0}_{\alpha}^- |K_0\rangle t_{B_1} t_{A_{13},I_8} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7,J_{11},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},I_7} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_{11},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}| 1^I 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle I_8|\hat{1}^-_{\beta} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_{13},I_8} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{14},J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_9|\hat{0}_\alpha^- |A_1\rangle \langle I_{14}|\hat{0}_\beta^+ |I_0\rangle \langle J_{12}|\hat{0}_\alpha^+ |J_0\rangle \langle K_7|\hat{0}_\beta^- |K_0\rangle t_{B_1} t_{A_9,J_{12}} t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{14},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_{12} |\hat{0}_{\alpha}^+ |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_9,J_{12}} t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{14},J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{10},J_{12}} t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{14},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{10},J_{12}} t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{13},J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle J_{12} |\hat{0}_\alpha^+ |J_0\rangle \langle K_7 |\hat{0}_\beta^- |K_0\rangle t_{B_1} t_{A_9,J_{12}} t_{I_{13},K_7} \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle J_{12} |\hat{0}_\alpha^+ |J_0\rangle \langle K_7 |\hat{0}_\beta^- |K_0\rangle t_{B_1} t_{A_9,J_{12}} t_{I_{13},K_7} \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle J_{12} |\hat{0}_\alpha^+ |J_0\rangle \langle K_7 |\hat{0}_\beta^- |K_0\rangle t_{B_1} t_{A_9,J_{12}} t_{I_{13},K_7} \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle J_{12} |\hat{0}_\alpha^+ |J_0\rangle \langle K_7 |\hat{0}_\beta^- |K_0\rangle t_{B_1} t_{A_9,J_{12}} t_{I_{13},K_7} \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle I_{12} |\hat{0}_\alpha^+ |J_0\rangle \langle I_{13} |\hat{0}_\beta^- |K_0\rangle t_{B_1} t_{A_9,J_{12}} t_{I_{13},K_7} \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{13} |\hat{0}_\beta^+ |I_0\rangle \langle I_{13} |\hat{0}_\alpha^- |A_1\rangle \langle I_{13} |\hat{0}_\beta^- |A_1\rangle \langle I_{13} |\hat{0}_\alpha^- |A_1\rangle \langle I_{13} |\hat{0}_$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{13}, J_{12}, K_8)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0\rangle \langle J_{12} |\hat{0}_{\alpha}^+ |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_9, J_{12}} t_{I_{13}, K_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{13},J_{12},K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^J0^K\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{10},J_{12}}t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{13},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{I}\sum_{K}\langle 1^A1^I|\hat{g}|0^J1^K\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{B_1}t_{A_{10},J_{12}}t_{I_{13},K_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{14}, J_{11}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^J 0^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_7 |\hat{0}_{\beta}^- |K_0\rangle t_{B_1} t_{A_9, J_{11}} t_{I_{14}, K_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{14},J_{11},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^J 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_9,J_{11}} t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{14},J_{11},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{10},J_{11}} t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{14},J_{11},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 1^K \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{10},J_{11}} t_{I_{14},K_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{13}, J_{11}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 1^J 0^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_7 |\hat{0}_{\beta}^- |K_0\rangle t_{B_1} t_{A_9, J_{11}} t_{I_{13}, K_7}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{13}, J_{11}, K_8)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|1^J 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle t_{B_1} t_{A_9, J_{11}} t_{I_{13}, K_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{13},J_{11},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 0^K \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{B_1} t_{A_{10},J_{11}} t_{I_{13},K_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_{13}, J_{11}, K_8)\rangle =$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I | \hat{g} | 1^J 1^K \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_8 | \hat{1}_{\beta}^- | K_0 \rangle t_{B_1} t_{A_{10}, J_{11}} t_{I_{13}, K_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_{12},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle I_{14} |\hat{0}^+_{\beta}|I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_7,I_{14}} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_{12},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,I_{14}} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 1^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_7,I_{14}} t_{J_{12},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_1, I_{14}, J_{12}, K_{10})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J | \hat{g} | 0^I 1^K \rangle \langle A_8 | \hat{1}^-_{\beta} | A_1 \rangle \langle I_{14} | \hat{0}^+_{\beta} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle \langle K_{10} | \hat{1}^-_{\alpha} | K_0 \rangle t_{B_1} t_{A_8, I_{14}} t_{J_{12}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_{12},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_7 |\hat{0}^-_\beta |A_1\rangle \langle I_{13} |\hat{1}^+_\beta |I_0\rangle \langle J_{12} |\hat{0}^+_\alpha |J_0\rangle \langle K_9 |\hat{0}^-_\alpha |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_{12},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,I_{13}} t_{J_{12},K_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_1, I_{13}, J_{12}, K_{10})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J | \hat{g} | 1^I 1^K \rangle \langle A_7 | \hat{0}^-_{\beta} | A_1 \rangle \langle I_{13} | \hat{1}^+_{\beta} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle \langle K_{10} | \hat{1}^-_{\alpha} | K_0 \rangle t_{B_1} t_{A_7, I_{13}} t_{J_{12}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|1^I 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,I_{13}} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle I_{14} |\hat{0}^+_{\beta}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{B_1} t_{A_7,I_{14}} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,I_{14}} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_7,I_{14}} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,I_{14}} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,I_{13}} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 1^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}| 1^I 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle t_{B_1} t_{A_8,I_{13}} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{9},J_{12},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{12}}t_{I_{9},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{12}}t_{I_{9},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{7},J_{14},K_{14})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{7},K_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{7},K_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{7},J_{14}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{7},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_7,J_{12},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|0^J0^K\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^+|K_0\rangle t_{B_1}t_{A_9,J_{12}}t_{I_7,K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{10}, J_{12}, K_{12})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^I|\hat{g}|0^J 0^K\rangle \langle A_9|\hat{0}^-_{\alpha}|A_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_9, J_{12}}t_{I_{10}, K_{12}}$$

$$\begin{split} & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{A} 1^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{9}, J_{12}} t_{I_{10}, K_{12}} \\ & + \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{A} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{9}, K_{12}} t_{I_{10}, J_{12}} \\ & + \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{A} 1^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{9}, K_{12}} t_{I_{10}, J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{8},J_{14},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{8},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{8},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{8},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_8,J_{12},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_8 |\hat{1}_\beta^- |I_0\rangle \langle J_{12} |\hat{0}_\alpha^+ |J_0\rangle \langle K_{14} |\hat{0}_\beta^+ |K_0\rangle t_{B_1} t_{A_9,J_{12}} t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{9},J_{12},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{9},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{9},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{7},J_{14},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{14}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{14}}t_{I_{7},J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_7, J_{12}, K_{14})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{10}|\hat{1}^-_{\alpha} |A_1\rangle \langle I_7|\hat{0}^-_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_{14}|\hat{0}^+_{\beta} |K_0\rangle t_{B_1} t_{A_{10}, J_{12}} t_{I_7, K_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{10},J_{12},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_8,J_{14},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^J0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_8,K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^K0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{14}}t_{I_8,K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^J0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{14}}t_{I_8,J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^K0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{14}}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_8,J_{12},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_{10},J_{12}} t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{9},J_{12},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{9},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{9},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{9},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{9},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_7,J_{14},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,J_{14}} t_{I_7,K_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|1^K 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,J_{14}} t_{I_7,K_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_7,J_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|1^K 0^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_7,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_7 |\hat{0}_\beta^- |I_0\rangle \langle J_{12} |\hat{0}_\alpha^+ |J_0\rangle \langle K_{13} |\hat{1}_\beta^+ |K_0\rangle t_{B_1} t_{A_9,J_{12}} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{10},J_{12},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{12}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{8},J_{14},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{14}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{13}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{13}}t_{I_{8},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_8,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{12} |\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_9,J_{12}} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{9},J_{12},K_{11})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{9},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{9},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{9},J_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{9},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{7},J_{14},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{14}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{7},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_7,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_{10},J_{12}} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{10},J_{12},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{12}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_8,J_{14},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_8,J_{14}} t_{I_8,K_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^K 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_8,J_{14}} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{A} 1^{I} | \hat{g} | 0^{J} 1^{K} \rangle \langle A_{8} | \hat{1}_{\beta}^{-} | A_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{8}, K_{13}} t_{I_{8}, J_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{A} 1^{I} | \hat{g} | 1^{K} 0^{J} \rangle \langle A_{8} | \hat{1}_{\beta}^{-} | A_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{13} | \hat{1}_{\beta}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{8}, K_{13}} t_{I_{8}, J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_8,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_{10},J_{12}} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{9},J_{11},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{12}}t_{I_{9},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{12}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{7},J_{13},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{7},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{7},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{7},J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{7},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_7,J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^I |\hat{g}| 1^J 0^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_7 |\hat{0}_\beta^- |I_0\rangle \langle J_{11} |\hat{1}_\alpha^+ |J_0\rangle \langle K_{14} |\hat{0}_\beta^+ |K_0\rangle t_{B_1} t_{A_9,J_{11}} t_{I_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{10},J_{11},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^J0^K\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{B_1}t_{A_9,J_{11}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^K1^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{B_1}t_{A_9,J_{11}}t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{A} 1^{I} | \hat{g} | 1^{J} 0^{K} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{9}, K_{12}} t_{I_{10}, J_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{A} 1^{I} | \hat{g} | 0^{K} 1^{J} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{10} | \hat{1}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{9}, K_{12}} t_{I_{10}, J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{8},J_{13},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{8},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{8},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{14}}t_{I_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_8,J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|1^J 0^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_9,J_{11}} t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{9},J_{11},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{9},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_7,J_{13},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^J0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_7,K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^K1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_7,K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^J0^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{14}}t_{I_7,J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^K1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{14}}t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_7,J_{11},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^J0^K\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{10},J_{11}}t_{I_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{10},J_{11},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{12}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{8},J_{13},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{8},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{8},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{14}}t_{I_{8},J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{14}}t_{I_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_8,J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 0^K \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{10},J_{11}} t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{9},J_{11},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{9},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{9},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{9},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{1},I_{7},J_{13},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},J_{13}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{13}}t_{I_{7},J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{7},K_{13}}t_{I_{7},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_7,J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|1^J 1^K \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_9,J_{11}} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{1},I_{10},J_{11},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},J_{11}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{9},K_{11}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_8,J_{13},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^J1^K\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_8,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^K1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_8,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^J1^K\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{B_1}t_{A_7,K_{13}}t_{I_8,J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^K1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{B_1}t_{A_7,K_{13}}t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_8,J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|1^J 1^K \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_8 |\hat{1}_\beta^- |I_0\rangle \langle J_{11} |\hat{1}_\alpha^+ |J_0\rangle \langle K_{13} |\hat{1}_\beta^+ |K_0\rangle t_{B_1} t_{A_9,J_{11}} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{9},J_{11},K_{11})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{9},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{9},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{9},J_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{1},I_{7},J_{13},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},J_{13}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{7},J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{8},K_{13}}t_{I_{7},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_7,J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 1^K \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{B_1} t_{A_{10},J_{11}} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{1},I_{10},J_{11},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},J_{11}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{A}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{B_{1}}t_{A_{10},K_{11}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_8,J_{13},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J1^K\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_8,K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^K1^J\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_8,K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J1^K\rangle\langle A_8|\hat{1}_{\beta}^-|A_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{B_1}t_{A_8,K_{13}}t_{I_8,J_{13}} \end{split}$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I | \hat{g} | 1^K 1^J \rangle \langle A_8 | \hat{1}_\beta^- | A_1 \rangle \langle I_8 | \hat{1}_\beta^- | I_0 \rangle \langle J_{13} | \hat{1}_\beta^+ | J_0 \rangle \langle K_{13} | \hat{1}_\beta^+ | K_0 \rangle t_{B_1} t_{A_8, K_{13}} t_{I_8, J_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_8,J_{11},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J1^K\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{B_1}t_{A_{10},J_{11}}t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_9,J_{12},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{14} |\hat{0}^+_{\beta} |K_0\rangle t_{B_1} t_{A_7,K_{14}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_9,J_{12},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_8,K_{14}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{10},J_{12},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^K0^J\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_7,K_{14}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{10},J_{12},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^K0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{14}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_9,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^I |\hat{g}|1^K 0^J \rangle \langle A_7 |\hat{0}^-_\beta |A_1\rangle \langle I_9 |\hat{0}^-_\alpha |I_0\rangle \langle J_{12} |\hat{0}^+_\alpha |J_0\rangle \langle K_{13} |\hat{1}^+_\beta |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_9,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^K 0^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0\rangle t_{B_1} t_{A_8,K_{13}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{10},J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|1^K 0^J \rangle \langle A_7 |\hat{0}^-_\beta |A_1 \rangle \langle I_{10}|\hat{1}^-_\alpha |I_0 \rangle \langle J_{12}|\hat{0}^+_\alpha |J_0 \rangle \langle K_{13}|\hat{1}^+_\beta |K_0 \rangle t_{B_1} t_{A_7,K_{13}} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{10},J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^I |\hat{g}|1^K 0^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle t_{B_1} t_{A_8,K_{13}} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_9,J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_7,K_{14}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_9,J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta}|K_0 \rangle t_{B_1} t_{A_8,K_{14}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{10},J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle \langle K_{14}|\hat{0}^+_{\beta} |K_0\rangle t_{B_1} t_{A_7,K_{14}} t_{I_{10},J_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_1, I_{10}, J_{11}, K_{14})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle \langle K_{14}|\hat{0}^+_{\beta} |K_0\rangle t_{B_1} t_{A_8, K_{14}} t_{I_{10}, J_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_9,J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0\rangle t_{B_1} t_{A_7,K_{13}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_9,J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^K 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0\rangle t_{B_1} t_{A_8,K_{13}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{10},J_{11},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^K1^J\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{B_1}t_{A_7,K_{13}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{10},J_{11},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^K1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{B_1}t_{A_8,K_{13}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_9,J_7,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{14},J_7} t_{I_9,K_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_9, J_8, K_{12})\rangle =$$

$$+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 0^I|\hat{g}|1^J 0^K\rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_9,K_{12}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_{10}, J_7, K_{12})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I | \hat{g} | 0^J 0^K \rangle \langle A_{14} | \hat{0}^+_{\beta} | A_1 \rangle \langle I_{10} | \hat{1}^-_{\alpha} | I_0 \rangle \langle J_7 | \hat{0}^-_{\beta} | J_0 \rangle \langle K_{12} | \hat{0}^+_{\alpha} | K_0 \rangle t_{B_1} t_{A_{14}, J_7} t_{I_{10}, K_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{10},J_8,K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{I}\sum_{K}\langle 0^A 1^I|\hat{g}|1^J 0^K\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{14},J_8}t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_9,J_7,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_7} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_9,J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_8} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{10},J_7,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_7} t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{10},J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 0^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_8} t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_9,J_7,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{14},J_7} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_9,J_8,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^J 1^K \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_{14},J_8} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_{10},J_7,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{14},J_7} t_{I_{10},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_{10}, J_8, K_{11})\rangle =$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I | \hat{g} | 1^J 1^K \rangle \langle A_{14} | \hat{0}^+_\beta | A_1 \rangle \langle I_{10} | \hat{1}^-_\alpha | I_0 \rangle \langle J_8 | \hat{1}^-_\beta | J_0 \rangle \langle K_{11} | \hat{1}^+_\alpha | K_0 \rangle t_{B_1} t_{A_{14}, J_8} t_{I_{10}, K_{11}} \rangle \langle I_{10} | \hat{I}^-_\alpha | I_0 \rangle \langle I_0 | I_0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_9,J_7,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_7} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_9,J_8,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_8} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{10},J_7,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_7} t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_{10},J_8,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{13},J_8} t_{I_{10},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_7, J_9, K_{12})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1\rangle \langle I_7|\hat{0}^-_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_{14}, I_7} t_{J_9, K_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_9,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1} t_{A_{14},I_8} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_7,J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_{14}|\hat{0}^+_\beta |A_1\rangle \langle I_7|\hat{0}^-_\beta |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_{12}|\hat{0}^+_\alpha |K_0\rangle t_{B_1} t_{A_{14},I_7} t_{J_{10},K_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_8, J_{10}, K_{12})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_{14}, I_8} t_{J_{10}, K_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7,J_9,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}| 0^I 0^K \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1\rangle \langle I_7| \hat{0}^-_{\beta} |I_0\rangle \langle J_9| \hat{0}^-_{\alpha} |J_0\rangle \langle K_{12}| \hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_{13},I_7} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_9,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1\rangle \langle I_8| \hat{1}^-_{\beta} |I_0\rangle \langle J_9| \hat{0}^-_{\alpha} |J_0\rangle \langle K_{12}| \hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_{13},I_8} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7,J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{13},I_7}t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I0^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{13},I_8}t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_7,J_9,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}|0^I 1^K \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{14},I_7} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_8,J_9,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_{14},I_8} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_1,I_7,J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_{14}|\hat{0}^+_\beta |A_1\rangle \langle I_7|\hat{0}^-_\beta |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_{11}|\hat{1}^+_\alpha |K_0\rangle t_{B_1} t_{A_{14},I_7} t_{J_{10},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_1, I_8, J_{10}, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J | \hat{g} | 1^I 1^K \rangle \langle A_{14} | \hat{0}^+_{\beta} | A_1 \rangle \langle I_8 | \hat{1}^-_{\beta} | I_0 \rangle \langle J_{10} | \hat{1}^-_{\alpha} | J_0 \rangle \langle K_{11} | \hat{1}^+_{\alpha} | K_0 \rangle t_{B_1} t_{A_{14}, I_8} t_{J_{10}, K_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_7,J_9,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}| 0^I 1^K \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1\rangle \langle I_7| \hat{0}^-_{\beta} |I_0\rangle \langle J_9| \hat{0}^-_{\alpha} |J_0\rangle \langle K_{11}| \hat{1}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_{13},I_7} t_{J_9,K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_8, J_9, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J | \hat{g} | 1^I 1^K \rangle \langle A_{13} | \hat{1}^+_{\beta} | A_1 \rangle \langle I_8 | \hat{1}^-_{\beta} | I_0 \rangle \langle J_9 | \hat{0}^-_{\alpha} | J_0 \rangle \langle K_{11} | \hat{1}^+_{\alpha} | K_0 \rangle t_{B_1} t_{A_{13}, I_8} t_{J_9, K_{11}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_1, I_7, J_{10}, K_{11})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle I_7|\hat{0}^-_{\beta} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_{13}, I_7} t_{J_{10}, K_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_1,I_8,J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I1^K\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{13},I_8}t_{J_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{14},J_7,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{12} |\hat{0}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,K_{12}} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{14},J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_{12} |\hat{0}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,K_{12}} t_{I_{14},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_{14}, J_7, K_{12})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I | \hat{g} | 0^K 0^J \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle I_{14} | \hat{0}_{\beta}^+ | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^- | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle t_{B_1} t_{A_{10}, K_{12}} t_{I_{14}, J_7}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_{14}, J_8, K_{12})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I | \hat{g} | 0^K 1^J \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle I_{14} | \hat{0}_{\beta}^+ | I_0 \rangle \langle J_8 | \hat{1}_{\beta}^- | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle t_{B_1} t_{A_{10}, K_{12}} t_{I_{14}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{13},J_7,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^K 0^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle J_7 |\hat{0}_\beta^- |J_0\rangle \langle K_{12} |\hat{0}_\alpha^+ |K_0\rangle t_{B_1} t_{A_9,K_{12}} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{13},J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle J_8 |\hat{1}_\beta^- |J_0\rangle \langle K_{12} |\hat{0}_\alpha^+ |K_0\rangle t_{B_1} t_{A_9,K_{12}} t_{I_{13},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_{13}, J_7, K_{12})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I | \hat{g} | 0^K 0^J \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^- | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle t_{B_1} t_{A_{10}, K_{12}} t_{I_{13}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{13},J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{10},K_{12}} t_{I_{13},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{14}, J_7, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{A} 0^{I} | \hat{g} | 1^{K} 0^{J} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle I_{14} | \hat{0}_{\beta}^{+} | I_{0} \rangle \langle J_{7} | \hat{0}_{\beta}^{-} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{B_{1}} t_{A_{9}, K_{11}} t_{I_{14}, J_{7}} dt_{A_{1}, A_{1}, A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_{14},J_8,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,K_{11}} t_{I_{14},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_{14}, J_7, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I | \hat{g} | 1^K 0^J \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle I_{14} | \hat{0}_{\beta}^+ | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^- | J_0 \rangle \langle K_{11} | \hat{1}_{\alpha}^+ | K_0 \rangle t_{B_1} t_{A_{10}, K_{11}} t_{I_{14}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{14},J_8,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^K 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{10},K_{11}} t_{I_{14},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{13}, J_7, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 1^K 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9, K_{11}} t_{I_{13}, J_7}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_{13}, J_8, K_{11})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I |\hat{g}| 1^K 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9, K_{11}} t_{I_{13}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_{13},J_7,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^K 0^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_{10},K_{11}} t_{I_{13},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_{13}, J_8, K_{11})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I | \hat{g} | 1^K 1^J \rangle \langle A_{10} | \hat{1}_{\alpha}^- | A_1 \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_8 | \hat{1}_{\beta}^- | J_0 \rangle \langle K_{11} | \hat{1}_{\alpha}^+ | K_0 \rangle t_{B_1} t_{A_{10}, K_{11}} t_{I_{13}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_9,K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_7,I_{14}} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_9,K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 0^J |\hat{g}|0^I 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_8,I_{14}} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_{10},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_7 |\hat{0}^-_\beta |A_1 \rangle \langle I_{14} |\hat{0}^+_\beta |I_0 \rangle \langle J_{10} |\hat{1}^-_\alpha |J_0 \rangle \langle K_{12} |\hat{0}^+_\alpha |K_0 \rangle t_{B_1} t_{A_7,I_{14}} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_{10},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^J |\hat{g}|0^I 0^K \rangle \langle A_8 |\hat{1}_{\beta}^- |A_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0\rangle \langle K_{12} |\hat{0}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_8,I_{14}} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_9,K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 0^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_9,K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^J |\hat{g}|1^I 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_8,I_{13}} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_{10},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^J |\hat{g}| 1^I 0^K \rangle \langle A_7 |\hat{0}^-_\beta |A_1\rangle \langle I_{13} |\hat{1}^+_\beta |I_0\rangle \langle J_{10} |\hat{1}^-_\alpha |J_0\rangle \langle K_{12} |\hat{0}^+_\alpha |K_0\rangle t_{B_1} t_{A_7,I_{13}} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_{10},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^J |\hat{g}|1^I 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_8,I_{13}} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{14},J_{9},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^J|\hat{g}|0^I1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{9}|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_7,I_{14}}t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_9,K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^J|\hat{g}|0^I1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_9,K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_1, I_{14}, J_{10}, K_{11})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^J |\hat{g}|0^I 1^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_7, I_{14}} t_{J_{10}, K_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{14},J_{10},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|0^I1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_8,I_{14}}t_{J_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_9,K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 0^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0 \rangle t_{B_1} t_{A_7,I_{13}} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_9,K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^A 0^J |\hat{g}| 1^I 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0 \rangle t_{B_1} t_{A_8,I_{13}} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{13},J_{10},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A 1^J|\hat{g}|1^I 1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_7,I_{13}}t_{J_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{13},J_{10},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^J|\hat{g}|1^I1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_8,I_{13}}t_{J_{10},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_7, J_{14}, K_{12})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^K 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{12} |\hat{0}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9, K_{12}} t_{I_7, J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_8,J_{14},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|0^K0^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{B_1}t_{A_9,K_{12}}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_7,J_{14},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|0^K0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{10},K_{12}}t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_8,J_{14},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|0^K0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{10},K_{12}}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_7,J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_7 |\hat{0}_\beta^- |I_0\rangle \langle J_{13} |\hat{1}_\beta^+ |J_0\rangle \langle K_{12} |\hat{0}_\alpha^+ |K_0\rangle t_{B_1} t_{A_9,K_{12}} t_{I_7,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_1, I_8, J_{13}, K_{12})\rangle =$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 1^I | \hat{g} | 0^K 1^J \rangle \langle A_9 | \hat{0}_{\alpha}^- | A_1 \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle t_{B_1} t_{A_9, K_{12}} t_{I_8, J_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_7,J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^K 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1} t_{A_{10},K_{12}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_8,J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|0^K 1^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_{10},K_{12}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_7,J_{14},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,K_{11}} t_{I_7,J_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,K_{11}} t_{I_7,J_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,K_{11}} t_{I_7,J_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_9,K_{11}} t_{I_7,J_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}| 1^K 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle I_1 |\hat{0}_{\beta}^- |I_0\rangle \langle I_1 |\hat{0}_{\beta}^- |I_0\rangle \langle I_1 |\hat{0}_{\beta}^- |I_0\rangle \langle I_1 |\hat{0}_{\beta}^+ |I_0\rangle \langle I_1 |\hat{0}_{\beta}^- |I_0\rangle \langle I_1 |I_0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_8,J_{14},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^K0^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{B_1}t_{A_9,K_{11}}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_7,J_{14},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A0^I|\hat{g}|1^K0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{10},K_{11}}t_{I_7,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_1, I_8, J_{14}, K_{11})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^K 0^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_{10}, K_{11}} t_{I_8, J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_7,J_{13},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^I |\hat{g}|1^K 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_7 |\hat{0}_\beta^- |I_0\rangle \langle J_{13} |\hat{1}_\beta^+ |J_0\rangle \langle K_{11} |\hat{1}_\alpha^+ |K_0\rangle t_{B_1} t_{A_9,K_{11}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_1,I_8,J_{13},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|1^K 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle I_8 |\hat{1}_\beta^- |I_0\rangle \langle J_{13} |\hat{1}_\beta^+ |J_0\rangle \langle K_{11} |\hat{1}_\alpha^+ |K_0\rangle t_{B_1} t_{A_9,K_{11}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_7,J_{13},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^A 0^I |\hat{g}|1^K 1^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{B_1} t_{A_{10},K_{11}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_1,I_8,J_{13},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^K1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_{10},K_{11}}t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_9,J_{14},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_7,J_{14}} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_9,J_{14},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|0^J 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_8,J_{14}} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{10},J_{14},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_7 |\hat{0}^-_\beta |A_1 \rangle \langle I_{10}|\hat{1}^-_\alpha |I_0 \rangle \langle J_{14}|\hat{0}^+_\beta |J_0 \rangle \langle K_{12}|\hat{0}^+_\alpha |K_0 \rangle t_{B_1} t_{A_7,J_{14}} t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{10},J_{14},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 1^I |\hat{g}|0^J 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_8,J_{14}} t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_9,J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^A 0^I |\hat{g}| 1^J 0^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1 \rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0 \rangle t_{B_1} t_{A_7,J_{13}} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_9,J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 0^I |\hat{g}|1^J 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_8,J_{13}} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{10},J_{13},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^J0^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{10},J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 1^I |\hat{g}|1^J 0^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_8,J_{13}} t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_9,J_{14},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle t_{B_1} t_{A_7,J_{14}} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_9,J_{14},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^A 0^I |\hat{g}|0^J 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_8,J_{14}} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{10},J_{14},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 0^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_7,J_{14}} t_{I_{10},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_1, I_{10}, J_{14}, K_{11})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{K} \langle 1^A 1^I |\hat{g}|0^J 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_8, J_{14}} t_{I_{10}, K_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_9,J_{13},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A0^I|\hat{g}|1^J1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_9,J_{13},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^A 0^I |\hat{g}|1^J 1^K \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle t_{B_1} t_{A_8,J_{13}} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_1,I_{10},J_{13},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^A1^I|\hat{g}|1^J1^K\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_7,J_{13}}t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_1,I_{10},J_{13},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^A1^I|\hat{g}|1^J1^K\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{B_1}t_{A_8,J_{13}}t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{12},J_{9},K_{9})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{12},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{12},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{12},J_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{12},J_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{14}, I_{14}, J_7, K_7)\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14}, J_7} t_{I_{14}, K_7}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{14},K_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{14},J_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{14},J_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_{14}, J_9, K_7)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B 0^I|\hat{g}|0^J 0^K\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_7|\hat{0}_{\beta}^{-}|K_0\rangle t_{A_1}t_{B_{12}, J_9}t_{I_{14}, K_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{12},J_9,K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J1^K\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{12},J_9}t_{I_{12},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|1^K0^J\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{12},J_9}t_{I_{12},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J1^K\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{12},K_{10}}t_{I_{12},J_9}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|1^K0^J\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{12},K_{10}}t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{14},J_{7},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{14},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{14},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{14},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{12},J_{10},K_9)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{12}|\hat{0}^+_\alpha |B_1\rangle \langle I_{12}|\hat{0}^+_\alpha |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle t_{A_1} t_{B_{12},J_{10}} t_{I_{12},K_9} \end{split}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{12},K_{9}}t_{I_{12},K_{9}}t_{I_{12},I_{10}}t_{I_{12},I_{10}}t_{I_{12},I_{10}}t_{I_{12},I_{10}}t_{I_{12},I_{10}}t_{I_{12},I_{10}}t_{I_{12},I_{10}}t_{I_{12},I_{12}}\sum_{I}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{12},J_{10}}t_{I_{12},I_{10}}t_{I_{12},I_{10}}t_{I_{12},I_{10}}t_{I_{12},I_{10}}t_{I_{12},I_{12},I_{10}}t_{I_{12},I_{12},I_{10}}t_{I_{12},I_{12},I_{10}}t_{I_{12},I_{12},I_{10}}t_{I_{12},I_{12},I_{10}}t_{I_{12},I_{12}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{14},J_{8},K_{7})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{14},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{14},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{14},J_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{14},J_{10},K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_{14}|\hat{0}_\beta^+ |I_0\rangle \langle J_{10}|\hat{1}_\alpha^- |J_0\rangle \langle K_7|\hat{0}_\beta^- |K_0\rangle t_{A_1} t_{B_{12},J_{10}} t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{12},J_{10},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{12},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{12},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{12},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{14},J_{8},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{14},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{14},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{14},J_{10},K_8)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_{14}|\hat{0}_\beta^+ |I_0\rangle \langle J_{10}|\hat{1}_\alpha^- |J_0\rangle \langle K_8|\hat{1}_\beta^- |K_0\rangle t_{A_1} t_{B_{12},J_{10}} t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{11},J_{9},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{11},K_{9}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{11},K_{9}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{11},J_{9}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{13},J_{7},K_{7})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{13},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{13},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{13},J_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{13},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{13},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{11},J_{9},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{11},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{11},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{11},J_{9}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{13},J_{7},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{13},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{13},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{13},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{13},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{13},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|0^J 1^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{11},J_{10},K_{9})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{11},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{11},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{11},J_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{13},J_{8},K_{7})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{13},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{13},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{13},J_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{13},J_{10},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{12},J_{10}} t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{11},J_{10},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{11},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{11},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{11},J_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{13},J_{8},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{13},J_{8}}\\ &+\frac{1}{12}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A_{1}}t_{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{13},J_{10},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{12},J_{10}} t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{12},J_{9},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{12},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{12},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{9}}t_{I_{12},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{9}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{14},J_7,K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},J_7} t_{I_{14},K_7} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},J_7} t_{I_{14},K_7} \end{split}$$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 0^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle B_{13} | \hat{1}^{+}_{\beta} | B_{1} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1}} t_{B_{13}, K_{7}} t_{I_{14}, J_{7}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 0^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle B_{13} | \hat{1}^{+}_{\beta} | B_{1} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{7} | \hat{0}^{-}_{\beta} | K_{0} \rangle t_{A_{1}} t_{B_{13}, K_{7}} t_{I_{14}, J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{14},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{12},J_{9},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{12},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{12},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{12},J_{9}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{14},J_{7},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{14},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{14},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{14},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{14},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{11}|\hat{1}^+_\alpha |B_1\rangle \langle I_{14}|\hat{0}^+_\beta |I_0\rangle \langle J_9|\hat{0}^-_\alpha |J_0\rangle \langle K_8|\hat{1}^-_\beta |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{12},J_{10},K_9)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J0^K\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},J_{10}}t_{I_{12},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^K1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},J_{10}}t_{I_{12},K_9} \end{split}$$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 0^{I} | \hat{g} | 1^{J} 0^{K} \rangle \langle B_{11} | \hat{1}^{+}_{\alpha} | B_{1} \rangle \langle I_{12} | \hat{0}^{+}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{1}^{-}_{\alpha} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{11}, K_{9}} t_{I_{12}, J_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 0^{I} | \hat{g} | 0^{K} 1^{J} \rangle \langle B_{11} | \hat{1}^{+}_{\alpha} | B_{1} \rangle \langle I_{12} | \hat{0}^{+}_{\alpha} | I_{0} \rangle \langle J_{10} | \hat{1}^{-}_{\alpha} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{11}, K_{9}} t_{I_{12}, J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{14},J_8,K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_{14},K_7} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_{14},K_7} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_7} t_{I_{14},J_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_7} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{14},J_{10},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{11},J_{10}} t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{12},J_{10},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{12},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{12},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{12},J_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{14},J_8,K_8)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J1^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_{14},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_{14},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J1^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_8}t_{I_{14},J_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_8}t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{14},J_{10},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J1^K\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{11},J_{10}}t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{11},J_{9},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{9}}t_{I_{11},J_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{9}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{13},J_{7},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{7}}t_{I_{13},J_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{7}}t_{I_{13},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{13},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{11},J_9} t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{11},J_9,K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J1^K\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^K0^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},J_9}t_{I_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J1^K\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},K_{10}}t_{I_{11},J_9}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^K0^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},K_{10}}t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{13},J_7,K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},J_7} t_{I_{13},K_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},J_7} t_{I_{13},K_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_8} t_{I_{13},J_7} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_8} t_{I_{13},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_{13}, J_9, K_8)\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 1^I |\hat{g}|0^J 1^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{11}, J_9} t_{I_{13}, K_8}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{11},J_{10},K_{9})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{11},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{11},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{9}}t_{I_{11},J_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{9}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{13},J_8,K_7)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^J0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_{13},K_7} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_{13},K_7} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^J0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_7}t_{I_{13},J_8} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_7}t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{13},J_{10},K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_{11}|\hat{1}^+_\alpha |B_1\rangle \langle I_{13}|\hat{1}^+_\beta |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_7|\hat{0}^-_\beta |K_0\rangle t_{A_1} t_{B_{11},J_{10}} t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{11},J_{10},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{11},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{11},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{11},J_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{13},J_{8},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{8}}t_{I_{13},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{8}}t_{I_{13},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{13},J_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{13}|\hat{1}^{+}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{13},J_{10},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{11},J_{10}} t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{14},J_7,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{14},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{14},J_7,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_{10}} t_{I_{14},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_{14}, J_8, K_{10})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12}, K_{10}} t_{I_{14}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{13},J_7,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{13},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{13},J_7,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_{10}} t_{I_{13},J_7} \end{split}$$

$$\langle (A_1, B_1) | \hat{H} | (A_1, B_{12}, I_{13}, J_8, K_{10}) \rangle =$$

$$+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I | \hat{g} | 1^K 1^J \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_8 | \hat{1}_{\beta}^- | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_{12}, K_{10}} t_{I_{13}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{14},J_7,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1} t_{B_{11},K_9} t_{I_{14},J_7} \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle I_0|\hat{0}^-_{\beta}|I_0\rangle \langle I_0|I_0\rangle \langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{14},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{11},K_9} t_{I_{14},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_{14}, J_7, K_{10})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B 0^I|\hat{g}|1^K 0^J\rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{11}, K_{10}}t_{I_{14}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{14},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{11},K_{10}} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{13},J_7,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{11},K_9} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{13},J_8,K_9)\rangle = \\ &+ \tfrac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_{11}|\hat{1}^+_\alpha |B_1\rangle \langle I_{13}|\hat{1}^+_\beta |I_0\rangle \langle J_8|\hat{1}^-_\beta |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle t_{A_1} t_{B_{11},K_9} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{13},J_7,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{11},K_{10}} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{13},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^I |\hat{g}|1^K 1^J \rangle \langle B_{11}|\hat{1}^+_\alpha |B_1\rangle \langle I_{13}|\hat{1}^+_\beta |I_0\rangle \langle J_8|\hat{1}^-_\beta |J_0\rangle \langle K_{10}|\hat{1}^-_\alpha |K_0\rangle t_{A_1} t_{B_{11},K_{10}} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_{12},K_9)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I0^K\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_{12},I_9}t_{J_{12},K_9} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^K0^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_{12},I_9}t_{J_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I0^K\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_{12},K_9}t_{I_9,J_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^K0^J\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_{12},K_9}t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7,J_{14},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_{14},K_7} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_{14},K_7} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_7,J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_7,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_9, J_{14}, K_7)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B 0^J|\hat{g}|0^I 0^K\rangle \langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle \langle I_9|\hat{0}_{\alpha}^-|I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle \langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{A_1}t_{B_{12},I_9}t_{J_{14},K_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{9},J_{12},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{12},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{9},J_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{9},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7,J_{14},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_{14},K_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_{14},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_8} t_{I_7,J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_8} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_{14},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{10},J_{12},K_{9})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{12},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{12},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{10},J_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{8},J_{14},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{14},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{14},K_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{8},J_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{8},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{10},J_{14},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I0^K\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_7|\hat{0}_{\beta}^-|K_0\rangle t_{A_1}t_{B_{12},I_{10}}t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{10},J_{12},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{12},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{10},J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_{14},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I1^K\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{14},I_8}t_{J_{14},K_8} \end{split}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{14},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{8},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{8},J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_{10}, J_{14}, K_8)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B 0^J|\hat{g}|1^I 1^K\rangle\langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_{12},I_{10}}t_{J_{14},K_8}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{9},J_{11},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{9},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{9}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{7},J_{13},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{13},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{13},K_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{7},J_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{7},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_{13},K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_{11},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|0^I1^K\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{12},I_9}t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{B} 0^{I} | \hat{g} | 1^{K} 1^{J} \rangle \langle B_{12} | \hat{0}_{\alpha}^{+} | B_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{12}, I_{9}} t_{J_{11}, K_{10}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{B} 1^{J} | \hat{g} | 0^{I} 1^{K} \rangle \langle B_{12} | \hat{0}_{\alpha}^{+} | B_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{12}, K_{10}} t_{I_{9}, J_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{B} 0^{I} | \hat{g} | 1^{K} 1^{J} \rangle \langle B_{12} | \hat{0}_{\alpha}^{+} | B_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{12}, K_{10}} t_{I_{9}, J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{7},J_{13},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{13},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{7},J_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{8}}t_{I_{7},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_{13},K_8)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{10},J_{11},K_9)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|1^I0^K\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{12},I_{10}}t_{J_{11},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^K1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{12},I_{10}}t_{J_{11},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|1^I0^K\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{12},K_9}t_{I_{10},J_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^K1^J\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{12},K_9}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{8},J_{13},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{13},K_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{13},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{14},K_{7}}t_{I_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{10},J_{13},K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_{10}|\hat{1}_\alpha^- |I_0\rangle \langle J_{13}|\hat{1}_\beta^+ |J_0\rangle \langle K_7|\hat{0}_\beta^- |K_0\rangle t_{A_1} t_{B_{12},I_{10}} t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{10},J_{11},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{11},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{10},J_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{12},K_{10}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_{13},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|1^I1^K\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{14},I_8}t_{J_{13},K_8}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|1^K1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{14},I_8}t_{J_{13},K_8}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|1^I1^K\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{14},K_8}t_{I_8,J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|1^K1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{14},K_8}t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_{10},J_{13},K_8)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^J |\hat{g}| 1^I 1^K \rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_{10}|\hat{1}_\alpha^- |I_0\rangle \langle J_{13}|\hat{1}_\beta^+ |J_0\rangle \langle K_8|\hat{1}_\beta^- |K_0\rangle t_{A_1} t_{B_{12},I_{10}} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_{12},K_9)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I0^K\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_{12},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^K0^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_{12},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I0^K\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},K_9}t_{I_9,J_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^K0^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_9|\hat{0}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},K_9}t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_{14},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_{14},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^K0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_7}t_{I_7,J_{14}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^K0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_7}t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_{14},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{11},I_9} t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_{12},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I1^K\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_{12},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K0^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_{12},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I1^K\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_{11},K_{10}}t_{I_9,J_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K0^J\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_{11},K_{10}}t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_{14},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{14},K_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{14},K_8} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_8} t_{I_7,J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_8} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_{14},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{11},I_9} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{10},J_{12},K_9)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|1^I0^K\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{11},I_{10}}t_{J_{12},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K0^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{11},I_{10}}t_{J_{12},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|1^I0^K\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{11},K_9}t_{I_{10},J_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K0^J\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{11},K_9}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{8},J_{14},K_{7})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{14},K_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{14},K_{7}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{7}}t_{I_{8},J_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{7}}t_{I_{8},J_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{14}|\hat{0}^{+}_{\beta}|J_{0}\rangle\langle K_{7}|\hat{0}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{7}}t_{I_{8},J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_{10}, J_{14}, K_7)\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 1^I 0^K \rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1\rangle \langle I_{10}| \hat{1}^-_{\alpha} |I_0\rangle \langle J_{14}| \hat{0}^+_{\beta} |J_0\rangle \langle K_7| \hat{0}^-_{\beta} |K_0\rangle t_{A_1} t_{B_{11}, I_{10}} t_{J_{14}, K_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{10},J_{12},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{12},K_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{12},K_{10}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{10},J_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8,J_{14},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}|1^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_{14},K_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{8},J_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{8},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{10},J_{14},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|1^I1^K\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_{11},I_{10}}t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{9},J_{11},K_{9})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{9}}t_{I_{9},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{9}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_{13},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{13},K_7} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{13},K_7} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_7} t_{I_7,J_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_7} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_{13},K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{11},I_9} t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_{11},K_{10})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|0^I1^K\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_{11},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K1^J\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_0\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_0\rangle t_{A_1}t_{B_{11},I_9}t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{9},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{7},J_{13},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}t_{J_{13},K_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}t_{J_{13},K_{8}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{7},J_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{7},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_{13},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1} t_{B_{11},I_9} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{10},J_{11},K_{9})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{11},K_{9}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{11},K_{9}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{9}}t_{I_{10},J_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{9}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8,J_{13},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|1^I0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},I_8}t_{J_{13},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},I_8}t_{J_{13},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|1^I0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_7}t_{I_8,J_{13}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_7}t_{I_8,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_{10}, J_{13}, K_7)\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1\rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle \langle K_7| \hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{11}, I_{10}} t_{J_{13}, K_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{10},J_{11},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{11},K_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{11},K_{10}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{10},J_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{11},K_{10}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{8},J_{13},K_{8})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{13},K_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{13},K_{8}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{8},J_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{13}|\hat{1}^{+}_{\beta}|J_{0}\rangle\langle K_{8}|\hat{1}^{-}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},K_{8}}t_{I_{8},J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_{10}, J_{13}, K_8)\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 1^I 1^K \rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1\rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle \langle K_8| \hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{11}, I_{10}} t_{J_{13}, K_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_7,J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_8,J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_8,J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_8,J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_8,J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_8,J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_8,J_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{0}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{A_1} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{0}_{\beta}^- |I_0\rangle \langle I_8|\hat{0}_{\beta}^- |I_0\rangle \langle I_1|\hat{0}_{\beta}^- |I_0\rangle \langle I_0|\hat{0}_{\beta}^- |I_0\rangle \langle I_0|\hat{0$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_7, J_{14}, K_{10})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^K 0^J \rangle \langle B_{12} |\hat{0}_{\alpha}^+ |B_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{10} |\hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12}, K_{10}} t_{I_7, J_{14}} t_{A_1} t_{A_1} t_{A_2} t_{A_3} t_{A_4} t_{A_5} t_{A_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_8,J_{14},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}| 1^K 0^J \rangle \langle B_{12} |\hat{0}^+_{\alpha}| B_1 \rangle \langle I_8 |\hat{1}^-_{\beta}| I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}| J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha}| K_0 \rangle t_{A_1} t_{B_{12},K_{10}} t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_7,J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_8,J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_9} t_{I_8,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_7, J_{13}, K_{10})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^K 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12}, K_{10}} t_{I_7, J_{13}} t_{A_1} t_{A_2} t_{A_3} t_{A_4} t_{A_5} t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_8,J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}| 1^K 1^J \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{10}|\hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{12},K_{10}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_7,J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_9|\hat{0}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{11},K_9} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_8,J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{11},K_9} t_{I_8,J_{14}} \rangle \langle I_8|\hat{1}^+_{\beta}|I_0 \rangle \langle I_8|\hat{1}^+_{\beta}|I_0 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle I_0 |I_0 \rangle \langle I_0 |I$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_7, J_{14}, K_{10})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I | \hat{g} | 1^K 0^J \rangle \langle B_{11} | \hat{1}_{\alpha}^+ | B_1 \rangle \langle I_7 | \hat{0}_{\beta}^- | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle \langle K_{10} | \hat{1}_{\alpha}^- | K_0 \rangle t_{A_1} t_{B_{11}, K_{10}} t_{I_7, J_{14}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_8, J_{14}, K_{10})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}| 1^K 0^J \rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1\rangle \langle I_8| \hat{1}_{\beta}^- |I_0\rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0\rangle \langle K_{10}| \hat{1}_{\alpha}^- |K_0\rangle t_{A_1} t_{B_{11}, K_{10}} t_{I_8, J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_7,J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{11},K_9} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_8,J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{11},K_9} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_7,J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1} t_{B_{11},K_{10}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_8,J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 1^J \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{11},K_{10}} t_{I_8,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_9, J_9, K_{12})\rangle =$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{9},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{7},J_{7},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{7},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{7},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{7},K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_7,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{9},J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{10},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{10},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{9},K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{9},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7,J_8,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta} |B_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle \langle J_8|\hat{1}^-_{\beta} |J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_8,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta} |B_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle \langle J_8|\hat{1}^-_{\beta} |J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_8,K_{14}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta} |B_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle \langle J_8|\hat{1}^-_{\beta} |J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_{14},J_8} t_{I_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta} |B_1 \rangle \langle I_7|\hat{0}^-_{\beta} |I_0 \rangle \langle J_8|\hat{1}^-_{\beta} |J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_{14},J_8} t_{I_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_8,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{10},J_{9},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{9},K_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{9},K_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{10},K_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{8},J_{7},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{8},K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_{10}, J_7, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}| 1^I 0^K \rangle \langle B_{12} |\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12}, I_{10}} t_{J_7, K_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{10},J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{10},K_{12}}t_{J_{10},K_{12}}t_{A_{12}}t_{A_{12}}t_{A_{12}}t_{A_{12},I_{10},I_{10}}t_{A_{12},I_{10}}t_{A_{12},I_{10}}t_{A_{12},I_{10}}t_{A_{12},I_{10},I_{10},I_{10}}t_{A_{12},I_{10}}t_{A_{12},I_{10},I_{10},I_{10}}t_{A_{12},I_{10}}t_{A_{12},I_{10},I_{10},I_{10}}t_{A_{12},I_{10},I_{10},I_{10}}t_{A_{12},I_{10},I_{10},I_{10}}t_{A_{12},I_{10},I_{10},I_{10}}t_{A_{12},I_{10},I_{10},I_{10},I_{10}}t_{A_{12},I_{10},I_{10},I_{10},I_{10}}t_{A_{12},I_{10},I_{10},I_{10},I_{10},I_{10},I_{10}}t_{A_{12},I_{10},$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{8},J_{8},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{8},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{8},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{8},K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_{10}, J_8, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_{12} |\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12}, I_{10}} t_{J_8, K_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{9},J_{9},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{9},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{9},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{7},J_{7},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{7},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{7},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{7},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{7},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_7,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{9},J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{9}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{9},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{9},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{7},J_{8},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{7}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{7},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{7},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_9,J_8,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},I_9} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{10},J_{9},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{10},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{10},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{10},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{10},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{9}}t_{I_{10},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{10}\rangle\langle J_{10}|\hat{0}_{\alpha}^{-}|J_{10}\rangle\langle I_{10}|\hat{0}_{\alpha}^{-}|J_{10}\rangle\langle I_{10}|\hat{0}_{\alpha}^{-}|J_{10}\rangle\langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_7,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},I_8} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{7},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{7}}t_{I_{8},K_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_{10}, J_7, K_{13})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_{12}| \hat{0}_{\alpha}^+ |B_1\rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0\rangle \langle J_7| \hat{0}_{\beta}^- |J_0\rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12}, I_{10}} t_{J_7, K_{13}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{12},I_{10},J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},I_{10}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{10},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{12},J_{10}}t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{14},I_{8},J_{8},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},I_{8}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{8},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{14},J_{8}}t_{I_{8},K_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_{10}, J_8, K_{13})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}| 1^I 1^K \rangle \langle B_{12}|\hat{0}^+_{\alpha} |B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_8|\hat{1}^-_{\beta} |J_0\rangle \langle K_{13}|\hat{1}^+_{\beta} |K_0\rangle t_{A_1} t_{B_{12}, I_{10}} t_{J_8, K_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_9,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 0^I 0^K \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1} t_{B_{11},I_9} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{9},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{7},J_{7},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{7},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{7},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{7},K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_7,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},I_9} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{9},J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{10},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{10},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{9},K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{9},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_8,K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|0^I0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_8,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_8,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|0^I0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_7,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_8,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 0^I 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},I_9} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{10},J_{9},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{9},K_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{9},K_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{10},K_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{8},J_{7},K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{7},K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{8},K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{14}|\hat{0}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{8},K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_{10}, J_7, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 1^I 0^K \rangle \langle B_{11}| \hat{1}_{\alpha}^+ |B_1\rangle \langle I_{10}| \hat{1}_{\alpha}^- |I_0\rangle \langle J_7| \hat{0}_{\beta}^- |J_0\rangle \langle K_{14}| \hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11}, I_{10}} t_{J_7, K_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{10},J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{10},K_{12}}t_{A_{1$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8,J_8,K_{14})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|1^I0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},I_8}t_{J_8,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^J0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},I_8}t_{J_8,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|1^I0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_8,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^J0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},J_8}t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{10},J_8,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{11},I_{10}} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{9},J_{9},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{9},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{9},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_7,K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I1^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_7,K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J1^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_7,K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I1^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J1^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{13},J_7}t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_7,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 0^I 1^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},I_9} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{9},J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{9}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{9},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{9},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{7},J_{8},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{7}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{8}}t_{I_{7},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{8}}t_{I_{7},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_9,J_8,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 0^I 1^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},I_9} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{10},J_{9},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{9},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{9},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{10},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{9}}t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{8},J_{7},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{7},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle\langle K_{13}|\hat{1}^{+}_{\beta}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{7},K_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{7}}t_{I_{8},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{10},J_7,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{11},I_{10}} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{11},I_{10},J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},I_{10}}t_{J_{10},K_{11}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{10},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{11},J_{10}}t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{13},I_{8},J_{8},K_{13})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},I_{8}}t_{J_{8},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{8}}t_{I_{8},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{13},J_{8}}t_{I_{8},K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_{10},J_8,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|1^I 1^K \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{11},I_{10}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_7,J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_8,J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_8,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_8,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_8,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_8,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_8,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{A_1} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{0}_{\beta}^- |I_0\rangle \langle I_8|\hat{0}_{\alpha}^- |J_0\rangle \langle I_8|\hat{0}_{\alpha}^- |J_0\rangle \langle I_8|\hat{0}_{\beta}^- |J_0\rangle \langle I_8|\hat{0}_{\beta}^- |J_0\rangle \langle I_8|\hat{0}_{\beta}^- |J_0\rangle \langle I_1|\hat{0}_{\beta}^- |J_0\rangle \langle I_0|\hat{0}_{\beta}^- |J_0\rangle \langle I_0|\hat{0}_{\beta}^- |J_0\rangle \langle I_0|\hat{0}_{\beta}^- |J_0\rangle \langle I_0|J_0$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_7,J_{10},K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 0^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},J_{10}} t_{I_7,K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{12}, I_8, J_{10}, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I | \hat{g} | 1^J 0^K \rangle \langle B_{12} | \hat{0}_{\alpha}^+ | B_1 \rangle \langle I_8 | \hat{1}_{\beta}^- | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle \langle K_{14} | \hat{0}_{\beta}^+ | K_0 \rangle t_{A_1} t_{B_{12}, J_{10}} t_{I_8, K_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_7,J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_8,J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 1^K \rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{12},J_9} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_7,J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 1^K \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{12},J_{10}} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{12},I_8,J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{12},J_{10}} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_7,J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{I_7,K_{14}} \rangle \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{I_7,K_{14}} \rangle \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{I_7,K_{14}} \rangle \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{I_7,K_{14}} \rangle \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{I_7,K_{14}} \rangle \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle I_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{A_1} \zeta_{A_1} \zeta_{A_1} \zeta_{A_1} \zeta_{A_2} \zeta_{A_1} \zeta_{A_1} \zeta_{A_2} \zeta_{A_1} \zeta_{A_1} \zeta_{A_2} \zeta_{A_2} \zeta_{A_1} \zeta_{A_2} \zeta_{A_1} \zeta_{A_2} \zeta_{A_1} \zeta_{A_2} \zeta_{A_2} \zeta_{A_1} \zeta_{A_2} \zeta_{A_1} \zeta_{A_1} \zeta_{A_2} \zeta_{A_2} \zeta_{A_2} \zeta_{A_2} \zeta_{A_1} \zeta_{A_2} \zeta_{A_2} \zeta_{A_2} \zeta_{A_2} \zeta_{A_1} \zeta_{A_2} \zeta_{A_2} \zeta_{A_1} \zeta_{A_2} \zeta_{A_2} \zeta_{A_2} \zeta_{A_2} \zeta_{A_1} \zeta_{A_2} \zeta_{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_8,J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_7,J_{10},K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{11},J_{10}} t_{I_7,K_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_8, J_{10}, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{11}, J_{10}} t_{I_8, K_{14}} t_{A_1} t_{A_2} t_{A_3} t_{A_4} t_{A_5} t_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_7,J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_8,J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^J 1^K \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_9|\hat{0}_{\alpha}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{11},J_9} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{11},I_7,J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{11},J_{10}} t_{I_7,K_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{11}, I_8, J_{10}, K_{13})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 1^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle B_{11} | \hat{1}^{+}_{\alpha} | B_{1} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{10} | \hat{1}^{-}_{\alpha} | J_{0} \rangle \langle K_{13} | \hat{1}^{+}_{\beta} | K_{0} \rangle t_{A_{1}} t_{B_{11}, J_{10}} t_{I_{8}, K_{13}} t_{A_{1}} t_{A_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{12},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{14}|\hat{0}^+_\beta |B_1\rangle \langle I_{12}|\hat{0}^+_\alpha |I_0\rangle \langle J_9|\hat{0}^-_\alpha |J_0\rangle \langle K_7|\hat{0}^-_\beta |K_0\rangle t_{A_1} t_{B_{14},K_7} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{12},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^K 0^J \rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_9 |\hat{0}_{\alpha}^- |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{14},K_8} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{12},J_{10},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{12},J_{10},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|1^K1^J\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{14},K_8}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{12},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{13}|\hat{1}^+_\beta |B_1\rangle \langle I_{12}|\hat{0}^+_\alpha |I_0\rangle \langle J_9|\hat{0}^-_\alpha |J_0\rangle \langle K_7|\hat{0}^-_\beta |K_0\rangle t_{A_1} t_{B_{13},K_7} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{12},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_{13}|\hat{1}^+_\beta |B_1\rangle \langle I_{12}|\hat{0}^+_\alpha |I_0\rangle \langle J_9|\hat{0}^-_\alpha |J_0\rangle \langle K_8|\hat{1}^-_\beta |K_0\rangle t_{A_1} t_{B_{13},K_8} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{12},J_{10},K_7)\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^K1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_7}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{12},J_{10},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_8} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{11},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{14}|\hat{0}^+_\beta |B_1\rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_9|\hat{0}^-_\alpha |J_0\rangle \langle K_7|\hat{0}^-_\beta |K_0\rangle t_{A_1} t_{B_{14},K_7} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{11},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}| 1^K 0^J \rangle \langle B_{14} |\hat{0}^+_{\beta}| B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha}| I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}| J_0 \rangle \langle K_8 |\hat{1}^-_{\beta}| K_0 \rangle t_{A_1} t_{B_{14},K_8} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{11},J_{10},K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{11},J_{10},K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^K 1^J \rangle \langle B_{14}|\hat{0}^+_\beta |B_1\rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_8|\hat{1}^-_\beta |K_0\rangle t_{A_1} t_{B_{14},K_8} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{11},J_9,K_7)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_7} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{11},J_9,K_8)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_8} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{11},J_{10},K_7)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_{13}|\hat{1}^+_\beta |B_1\rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle \langle K_7|\hat{0}^-_\beta |K_0\rangle t_{A_1} t_{B_{13},K_7} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{11},J_{10},K_8)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^K1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_8}t_{I_{11},J_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{14}, I_{12}, J_7, K_9)\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14}, J_7} t_{I_{12}, K_9}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{12},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 0^K \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0 \rangle \langle J_8 |\hat{1}^-_{\beta} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_{14},J_8} t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{12},J_7,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},J_7} t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{12},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}| 1^J 1^K \rangle \langle B_{14}|\hat{0}^+_\beta |B_1\rangle \langle I_{12}|\hat{0}^+_\alpha |I_0\rangle \langle J_8|\hat{1}^-_\beta |J_0\rangle \langle K_{10}|\hat{1}^-_\alpha |K_0\rangle t_{A_1} t_{B_{14},J_8} t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{12},J_7,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1} t_{B_{13},J_7} t_{I_{12},K_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_{12}, J_8, K_9)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B 0^I|\hat{g}|1^J 0^K\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{13}, J_8}t_{I_{12}, K_9}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_{12}, J_7, K_{10})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B 0^I|\hat{g}|0^J 1^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{13}, J_7}t_{I_{12}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{12},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{11},J_7,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},J_7} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{11},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},J_8} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{11},J_7,K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J1^K\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{14},J_7}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{11},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{14}|\hat{0}^+_\beta |B_1\rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_8|\hat{1}^-_\beta |J_0\rangle \langle K_{10}|\hat{1}^-_\alpha |K_0\rangle t_{A_1} t_{B_{14},J_8} t_{I_{11},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_{11}, J_7, K_9)\rangle =$$

$$+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle B_{13} | \hat{1}^{+}_{\beta} | B_{1} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle \langle K_{9} | \hat{0}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{13}, J_{7}} t_{I_{11}, K_{9}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{11},J_8,K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_9|\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_{11},K_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_{11}, J_7, K_{10})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 1^I |\hat{g}|0^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13}, J_7} t_{I_{11}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{11},J_8,K_{10})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_{12},K_9)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I0^K\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J0^K\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_{12},K_9} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I0^K\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_{12},K_9} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J0^K\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_9|\hat{0}_{\alpha}^-|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_{14},K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I0^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J0^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I0^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_7,J_{14}}t_{I_{14},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J0^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_7|\hat{0}_\beta^-|K_0\rangle t_{A_1}t_{B_7,J_{14}}t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_{14},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle \langle J_{14}|\hat{0}_\beta^+ |J_0\rangle \langle K_7|\hat{0}_\beta^- |K_0\rangle t_{A_1} t_{B_9,I_{12}} t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_{12},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I1^K\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_{14},K_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J1^K\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_{14},K_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I1^K\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_7,J_{14}}t_{I_{14},K_8} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J1^K\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_7,J_{14}}t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle \langle J_{14}|\hat{0}_\beta^+ |J_0\rangle \langle K_8|\hat{1}_\beta^- |K_0\rangle t_{A_1} t_{B_9,I_{12}} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_{12},K_9)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I0^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_{12},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J0^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_{12},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I0^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_{12},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J0^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_{14},K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_{14},K_7}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_{14},K_7}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_{14},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{10},I_{12}} t_{J_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{12},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{12},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{14},J_{14},K_{8})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{14},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{14},K_{8}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{14}}t_{I_{14},K_{8}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{8}|\hat{1}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{14}}t_{I_{14},K_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I1^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{12},J_{11},K_{9})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{12}}t_{J_{11},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{12}}t_{J_{11},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{12},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{12},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{7},I_{14},J_{13},K_{7})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{13}}t_{I_{14},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{13}}t_{I_{14},K_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_{13},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle \langle J_{13}|\hat{1}_\beta^+ |J_0\rangle \langle K_7|\hat{0}_\beta^- |K_0\rangle t_{A_1} t_{B_9,I_{12}} t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B 1^J|\hat{g}|0^I 1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B 0^I|\hat{g}|1^J 1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B 1^J|\hat{g}|0^I 1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,J_{11}}t_{I_{12},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B 0^I|\hat{g}|1^J 1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,J_{11}}t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|0^I1^K\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|1^J1^K\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|0^I1^K\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_{14},K_8} \end{split}$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I | \hat{g} | 1^J 1^K \rangle \langle B_7 | \hat{0}^-_\beta | B_1 \rangle \langle I_{14} | \hat{0}^+_\beta | I_0 \rangle \langle J_{13} | \hat{1}^+_\beta | J_0 \rangle \langle K_8 | \hat{1}^-_\beta | K_0 \rangle t_{A_1} t_{B_7, J_{13}} t_{I_{14}, K_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle \langle J_{13}|\hat{1}_\beta^+ |J_0\rangle \langle K_8|\hat{1}_\beta^- |K_0\rangle t_{A_1} t_{B_9,I_{12}} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{12},J_{11},K_{9})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{11},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{11},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{12},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{12},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{14},J_{13},K_{7})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{14},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{14},K_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_{13},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 0^I 0^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{10},I_{12}} t_{J_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{12},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{12},K_{10}} \end{split}$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 0^{I} | \hat{g} | 1^{J} 1^{K} \rangle \langle B_{10} | \hat{1}_{\alpha}^{-} | B_{1} \rangle \langle I_{12} | \hat{0}_{\alpha}^{+} | I_{0} \rangle \langle J_{11} | \hat{1}_{\alpha}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{10}, J_{11}} t_{I_{12}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|0^I1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|0^I1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{13}}t_{I_{14},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{13}}t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{10},I_{12}} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_{12},K_9)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I0^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_{12},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J0^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_{12},K_9}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I0^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_{11},K_9}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J0^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{7},I_{13},J_{14},K_{7})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{14},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{14},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{13},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{13},K_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_9, I_{11}, J_{14}, K_7)\rangle =$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J | \hat{g} | 1^I 0^K \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_{11} | \hat{1}_\alpha^+ | I_0 \rangle \langle J_{14} | \hat{0}_\beta^+ | J_0 \rangle \langle K_7 | \hat{0}_\beta^- | K_0 \rangle t_{A_1} t_{B_9, I_{11}} t_{J_{14}, K_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_{12},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_{11},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I1^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_8|\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_{14},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J1^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_8|\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_{14},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I1^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_8|\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_7,J_{14}}t_{I_{13},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J1^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_{14}|\hat{0}_\beta^+|J_0\rangle\langle K_8|\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_7,J_{14}}t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}| \hat{1}_{\alpha}^+ |I_0\rangle \langle J_{14}| \hat{0}_{\beta}^+ |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_9,I_{11}} t_{J_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{11},J_{12},K_{9})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{12},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{12},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{11},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{11},K_{9}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_8, I_{13}, J_{14}, K_7)\rangle =$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{13}}t_{J_{14},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{13}}t_{J_{14},K_{7}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{14}}t_{I_{13},K_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{14}}t_{I_{13},K_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{11}, J_{14}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J | \hat{g} | 1^I 0^K \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{14} | \hat{0}_{\beta}^+ | J_0 \rangle \langle K_7 | \hat{0}_{\beta}^- | K_0 \rangle t_{A_1} t_{B_{10}, I_{11}} t_{J_{14}, K_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{11},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|1^I1^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},I_{11}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J1^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},I_{11}}t_{J_{12},K_{10}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|1^I1^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_{11},K_{10}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J1^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|1^I1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_{14},K_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_{14},K_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|1^I1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_{13},K_8} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{11},J_{14},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|1^I1^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{10},I_{11}}t_{J_{14},K_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_9, I_{11}, J_{11}, K_9)\rangle =$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}t_{J_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}t_{J_{11},K_{9}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{11},K_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{11},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{7},I_{13},J_{13},K_{7})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{13}}t_{I_{13},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{13}}t_{I_{13},K_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_9, I_{11}, J_{13}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}| \hat{1}_{\alpha}^+ |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle \langle K_7 |\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_9, I_{11}} t_{J_{13}, K_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{11},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{11},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|1^I1^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_8|\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|1^J1^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_8|\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_{13},K_8}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|1^I1^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_8|\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_{13},K_8}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|1^J1^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{13}|\hat{1}_\beta^+|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_8|\hat{1}_\beta^-|K_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}| 1^I 1^K \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_9,I_{11}} t_{J_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{11},J_{11},K_{9})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{11},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{11},K_{9}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{11},K_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{9}|\hat{0}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{11},K_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{13},J_{13},K_{7})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{13}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{13}}t_{J_{13},K_{7}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{13},K_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{7}|\hat{0}_{\beta}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{13},K_{7}} \end{split}$$

$$\langle (A_1, B_1) | \hat{H} | (A_1, B_{10}, I_{11}, J_{13}, K_7) \rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J | \hat{g} | 1^I 0^K \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_{13} | \hat{1}_{\beta}^+ | J_0 \rangle \langle K_7 | \hat{0}_{\beta}^- | K_0 \rangle t_{A_1} t_{B_{10}, I_{11}} t_{J_{13}, K_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{11},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{11},K_{10}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{11},K_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{10}|\hat{1}_{\alpha}^{-}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_{13},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|1^I1^K\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_{13},K_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^J1^K\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_{13},K_8} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|1^I1^K\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_8,J_{13}}t_{I_{13},K_8} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^J1^K\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_8|\hat{1}_{\beta}^-|K_0\rangle t_{A_1}t_{B_8,J_{13}}t_{I_{13},K_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{11}, J_{13}, K_8)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|1^I 1^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_8|\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{10}, I_{11}} t_{J_{13}, K_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{12},J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{12},J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_8 |\hat{1}^-_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_8,J_{14}} t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{12},J_{14},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{12},J_{14},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_8,J_{14}} t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{12},J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 0^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{12},J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{12},J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{12},J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_8 |\hat{1}^-_\beta |B_1 \rangle \langle I_{12} |\hat{0}^+_\alpha |I_0 \rangle \langle J_{13} |\hat{1}^+_\beta |J_0 \rangle \langle K_{10} |\hat{1}^-_\alpha |K_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{11},J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{11},J_{14},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_8 |\hat{1}^-_\beta |B_1 \rangle \langle I_{11} |\hat{1}^+_\alpha |I_0 \rangle \langle J_{14} |\hat{0}^+_\beta |J_0 \rangle \langle K_9 |\hat{0}^-_\alpha |K_0 \rangle t_{A_1} t_{B_8,J_{14}} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{11},J_{14},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_{11},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_8, I_{11}, J_{14}, K_{10})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 1^{I} | \hat{g} | 0^{J} 1^{K} \rangle \langle B_{8} | \hat{1}_{\beta}^{-} | B_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{10} | \hat{1}_{\alpha}^{-} | K_{0} \rangle t_{A_{1}} t_{B_{8}, J_{14}} t_{I_{11}, K_{10}} dt_{A_{1}} dt$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{11},J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{11},J_{13},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{11},J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{11},J_{13},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_9,K_{12})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I0^K\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^K0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_9,K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I0^K\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_9,K_{12}}t_{I_{12},J_9} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^K0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_9,K_{12}}t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_7,K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|0^I0^K\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_7,K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^K0^J\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{14}}t_{I_{14},J_{7}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{14}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_7,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_9 |\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_7 |\hat{0}^-_{\beta}|J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_9,I_{12}} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{12},J_{10},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{12}}t_{J_{10},K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{12}}t_{J_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{12}}t_{I_{12},J_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{12}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_8,K_{14})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|0^I0^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_8|\hat{1}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_8,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^K1^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_8|\hat{1}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1}t_{B_7,I_{14}}t_{J_8,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|0^I0^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_8|\hat{1}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1}t_{B_7,K_{14}}t_{I_{14},J_8} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^K1^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_8|\hat{1}_\beta^-|J_0\rangle\langle K_{14}|\hat{0}_\beta^+|K_0\rangle t_{A_1}t_{B_7,K_{14}}t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_8,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_9 |\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_8 |\hat{1}^-_{\beta}|J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_9,I_{12}} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_9,K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I0^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_9,K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^K0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},I_{12}}t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{12},J_{9}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{14},J_{7},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{7},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{7},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{14}}t_{I_{14},J_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{14}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_7,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{10},I_{12}} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{12},J_{10},K_{12})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{10},K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{10},K_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{12},J_{10}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_8,K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|0^I0^K\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_8,K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^K1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_8,K_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|0^I0^K\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_8,K_{14}}t_{I_{14},J_8}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^K1^J\rangle\langle B_8|\hat{1}_{\beta}^{-}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_8|\hat{1}_{\beta}^{-}|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_0\rangle t_{A_1}t_{B_8,K_{14}}t_{I_{14},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{12}, J_8, K_{14})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{K}\langle 1^B 1^J|\hat{g}|0^I 0^K\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^+|K_0\rangle t_{A_1}t_{B_{10}, I_{12}}t_{J_8, K_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_9,K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle \langle J_9|\hat{0}_\alpha^- |J_0\rangle \langle K_{11}|\hat{1}_\alpha^+ |K_0\rangle t_{A_1} t_{B_9,I_{12}} t_{J_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle \langle J_9|\hat{0}_\alpha^- |J_0\rangle \langle K_{11}|\hat{1}_\alpha^+ |K_0\rangle t_{A_1} t_{B_9,I_{12}} t_{J_9,K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle \langle J_9|\hat{0}_\alpha^- |J_0\rangle \langle K_{11}|\hat{1}_\alpha^+ |K_0\rangle t_{A_1} t_{B_9,K_{11}} t_{I_{12},J_9} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_{12}|\hat{0}_\alpha^+ |I_0\rangle \langle J_9|\hat{0}_\alpha^- |J_0\rangle \langle K_{11}|\hat{1}_\alpha^+ |K_0\rangle t_{A_1} t_{B_9,K_{11}} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{7},I_{14},J_{7},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{14}}t_{J_{7},K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{14},J_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_7,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_9 |\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_7 |\hat{0}^-_{\beta}|J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_9,I_{12}} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_{10},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|0^I1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|1^K1^J\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_9,I_{12}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|0^I1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_9,K_{11}}t_{I_{12},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|1^K1^J\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_9,K_{11}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_8,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_7,I_{14}} t_{J_8,K_{13}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_7,I_{14}} t_{J_8,K_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_7,K_{13}} t_{I_{14},J_8} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_7,K_{13}} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{12},J_8,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_9 |\hat{0}_\alpha^- |B_1\rangle \langle I_{12} |\hat{0}_\alpha^+ |I_0\rangle \langle J_8 |\hat{1}_\beta^- |J_0\rangle \langle K_{13} |\hat{1}_\beta^+ |K_0\rangle t_{A_1} t_{B_9,I_{12}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{12},J_{9},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{9},K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{9},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{12},J_{9}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_7,K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_7,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_7,K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{13}}t_{I_{14},J_7} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{13}}t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_7,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{10},I_{12}} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{12},J_{10},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{12}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{12},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{14},J_{8},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{14}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|0^{I}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{13}}t_{I_{14},J_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{13}}t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{12},J_8,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{10},I_{12}} t_{J_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_9,K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I0^K\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_9,K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^K0^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_9,I_{11}}t_{J_9,K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I0^K\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_9,K_{12}}t_{I_{11},J_9} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^K0^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_9,K_{12}}t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{7},I_{13},J_{7},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{7},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{7},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{14}}t_{I_{13},J_{7}} \end{split}$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I | \hat{g} | 0^K 0^J \rangle \langle B_7 | \hat{0}^-_\beta | B_1 \rangle \langle I_{13} | \hat{1}^+_\beta | I_0 \rangle \langle J_7 | \hat{0}^-_\beta | J_0 \rangle \langle K_{14} | \hat{0}^+_\beta | K_0 \rangle t_{A_1} t_{B_7, K_{14}} t_{I_{13}, J_7} \rangle dt_{A_1} dt_{A_2} dt_{A_3} dt_{A_4} dt_{A_5} d$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_7,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^J |\hat{g}| 1^I 0^K \rangle \langle B_9 |\hat{0}_\alpha^- |B_1\rangle \langle I_{11}|\hat{1}_\alpha^+ |I_0\rangle \langle J_7 |\hat{0}_\beta^- |J_0\rangle \langle K_{14}|\hat{0}_\beta^+ |K_0\rangle t_{A_1} t_{B_9,I_{11}} t_{J_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{11},J_{10},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}t_{J_{10},K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}t_{J_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{12}}t_{I_{11},J_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{12}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{7},I_{13},J_{8},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{8},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{8},K_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{14}}t_{I_{13},J_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{14}}t_{I_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_8,K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_9,I_{11}} t_{J_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{11},J_{9},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{9},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{9},K_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{11},J_{9}} \end{split}$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I | \hat{g} | 0^K 0^J \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_{11} | \hat{1}_{\alpha}^+ | I_0 \rangle \langle J_9 | \hat{0}_{\alpha}^- | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle t_{A_1} t_{B_{10}, K_{12}} t_{I_{11}, J_9} \rangle dt_{A_1} t_{B_{10}, K_{12}} t_{I_{11}, J_9} dt_{A_1} t_{A_1} t_{A_2} t_{A_3} t_{A_4} t_{A_5} dt_{A_5} dt$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_7,K_{14})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|1^I0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_7,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_7,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|1^I0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{14}}t_{I_{13},J_7} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{14}}t_{I_{13},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{11}, J_7, K_{14})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B 0^J|\hat{g}|1^I 0^K\rangle \langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle \langle J_7|\hat{0}_{\beta}^-|J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+|K_0\rangle t_{A_1}t_{B_{10}, I_{11}}t_{J_7, K_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{11},J_{10},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{10},K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{10},K_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{11},J_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_8,K_{14})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|1^I0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_8,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,I_{13}}t_{J_8,K_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|1^I0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{14}}t_{I_{13},J_8} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{14}}t_{I_{13},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{11}, J_8, K_{14})\rangle =$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 1^{J} | \hat{g} | 1^{I} 0^{K} \rangle \langle B_{10} | \hat{1}_{\alpha}^{-} | B_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{8} | \hat{1}_{\beta}^{-} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{10}, I_{11}} t_{J_{8}, K_{14}} | \hat{I}_{12} \rangle \langle I_{11} | \hat{I}_{12} | I_{12} \rangle \langle I_{11} | \hat{I}_{12} | I_{12} \rangle \langle I_{12} | I_{12} I_{12} | I_{12} \rangle \langle$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{11},J_{9},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}t_{J_{9},K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}t_{J_{9},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{11}}t_{I_{11},J_{9}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{11}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{7},I_{13},J_{7},K_{13})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{7},K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{7},K_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{13},J_{7}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{13},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{11},J_7,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_9,I_{11}} t_{J_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{11},J_{10},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}t_{J_{10},K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},I_{11}}t_{J_{10},K_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{11}}t_{I_{11},J_{10}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{11}}t_{I_{11},J_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_7, I_{13}, J_8, K_{13})\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},I_{13}}t_{J_{8},K_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{13},J_{8}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{13},J_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_9, I_{11}, J_8, K_{13})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B 1^J|\hat{g}|1^I 1^K\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_9, I_{11}}t_{J_8, K_{13}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{11},J_{9},K_{11})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{9},K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{9},K_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{11},J_{9}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{13},J_{7},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{13}}t_{J_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{13}}t_{J_{7},K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{13}}t_{I_{13},J_{7}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{13}}t_{I_{13},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{11},J_7,K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{13}|\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{10},I_{11}} t_{J_7,K_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{11}, J_{10}, K_{11})\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},I_{11}}t_{J_{10},K_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{11},J_{10}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{13},J_{8},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{13}}t_{J_{8},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},I_{13}}t_{J_{8},K_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{J}|\hat{g}|1^{I}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{13}}t_{I_{13},J_{8}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{13}}t_{I_{13},J_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{11}, J_8, K_{13})\rangle =$$

$$+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 1^I 1^K \rangle \langle B_{10}| \hat{1}_{\alpha}^- |B_1\rangle \langle I_{11}| \hat{1}_{\alpha}^+ |I_0\rangle \langle J_8| \hat{1}_{\beta}^- |J_0\rangle \langle K_{13}| \hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{10}, I_{11}} t_{J_8, K_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{12},J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_7,K_{14}} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{12},J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1\rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{14} |\hat{0}^+_{\beta} |K_0\rangle t_{A_1} t_{B_8,K_{14}} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{12},J_{10},K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_7 |\hat{0}^-_\beta |B_1 \rangle \langle I_{12} |\hat{0}^+_\alpha |I_0 \rangle \langle J_{10} |\hat{1}^-_\alpha |J_0 \rangle \langle K_{14} |\hat{0}^+_\beta |K_0 \rangle t_{A_1} t_{B_7,K_{14}} t_{I_{12},J_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_8, I_{12}, J_{10}, K_{14})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I | \hat{g} | 0^K 1^J \rangle \langle B_8 | \hat{1}^-_{\beta} | B_1 \rangle \langle I_{12} | \hat{0}^+_{\alpha} | I_0 \rangle \langle J_{10} | \hat{1}^-_{\alpha} | J_0 \rangle \langle K_{14} | \hat{0}^+_{\beta} | K_0 \rangle t_{A_1} t_{B_8, K_{14}} t_{I_{12}, J_{10}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_7, I_{12}, J_9, K_{13})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^K 0^J \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_7, K_{13}} t_{I_{12}, J_9}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{12},J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_8,K_{13}} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{12},J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_7 |\hat{0}^-_\beta |B_1 \rangle \langle I_{12} |\hat{0}^+_\alpha |I_0 \rangle \langle J_{10} |\hat{1}^-_\alpha |J_0 \rangle \langle K_{13} |\hat{1}^+_\beta |K_0 \rangle t_{A_1} t_{B_7,K_{13}} t_{I_{12},J_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_8, I_{12}, J_{10}, K_{13})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1\rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0\rangle t_{A_1} t_{B_8, K_{13}} t_{I_{12}, J_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{11},J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_7,K_{14}} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{11},J_9,K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_8,K_{14}} t_{I_{11},J_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_7, I_{11}, J_{10}, K_{14})\rangle =$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{11},J_{10},K_{14})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_8,K_{14}} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{11},J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_7,K_{13}} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{11},J_9,K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_8,K_{13}} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{11},J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}| 1^K 1^J \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_7,K_{13}} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{11},J_{10},K_{13})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}| 1^K 1^J \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1\rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0\rangle t_{A_1} t_{B_8,K_{13}} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_9,J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_9,J_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_9,J_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_9,J_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_9,J_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle I_1 |\hat{0}^-_{\alpha}|I_0 \rangle \langle I_1 |I_0 \rangle \langle I_0 \rangle \langle I_1 |I_0 \rangle \langle I_0 |I_0 \rangle \langle I_0 \rangle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_9,J_{12},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^K 0^J \rangle \langle B_{14} |\hat{0}^+_{\beta}| B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}| I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}| J_0 \rangle \langle K_8 |\hat{1}^-_{\beta}| K_0 \rangle t_{A_1} t_{B_{14},K_8} t_{I_9,J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{14}, I_{10}, J_{12}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14}, K_7} t_{I_{10}, J_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{10},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_8} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_9,J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_7} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_9,J_{12},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}| 1^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_9|\hat{0}^-_{\alpha} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle \langle K_8|\hat{1}^-_{\beta} |K_0\rangle t_{A_1} t_{B_{13},K_8} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{10},J_{12},K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K0^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_7}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{10},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_8} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_9,J_{11},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_9,J_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_9,J_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_9,J_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_9,J_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_7} t_{I_9,J_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_14,K_7} t_{A_14,K_7} t_{A_14,$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_9,J_{11},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^K 1^J \rangle \langle B_{14} |\hat{0}^+_{\beta}| B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}| I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}| J_0 \rangle \langle K_8 |\hat{1}^-_{\beta}| K_0 \rangle t_{A_1} t_{B_{14},K_8} t_{I_9,J_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{14}, I_{10}, J_{11}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I | \hat{g} | 0^K 1^J \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_{10} | \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{11} | \hat{1}^+_{\alpha} | J_0 \rangle \langle K_7 | \hat{0}^-_{\beta} | K_0 \rangle t_{A_1} t_{B_{14}, K_7} t_{I_{10}, J_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{10},J_{11},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^K 1^J \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{14},K_8} t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_9,J_{11},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7|\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_7} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_9,J_{11},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{13},K_8} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{10},J_{11},K_7)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_7|\hat{0}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_7}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{10},J_{11},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{I}\sum_{K}\langle 1^B1^I|\hat{g}|1^K1^J\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{13},K_8}t_{I_{10},J_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{14}, I_7, J_{12}, K_9)\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B 0^J|\hat{g}|0^I 0^K\rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{14}, I_7}t_{J_{12}, K_9}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_{12},K_9)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^J |\hat{g}| 1^I 0^K \rangle \langle B_{14} |\hat{0}^+_\beta |B_1\rangle \langle I_8 |\hat{1}^-_\beta |I_0\rangle \langle J_{12} |\hat{0}^+_\alpha |J_0\rangle \langle K_9 |\hat{0}^-_\alpha |K_0\rangle t_{A_1} t_{B_{14},I_8} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7,J_{12},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_{12},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^J|\hat{g}|1^I1^K\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{14},I_8}t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_{12},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1} t_{B_{13},I_7} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8,J_{12},K_9)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^J |\hat{g}|1^I 0^K \rangle \langle B_{13}|\hat{1}^+_\beta |B_1\rangle \langle I_8|\hat{1}^-_\beta |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle t_{A_1} t_{B_{13},I_8} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_{12},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_\beta |B_1\rangle \langle I_7|\hat{0}^-_\beta |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_{10}|\hat{1}^-_\alpha |K_0\rangle t_{A_1} t_{B_{13},I_7} t_{J_{12},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_8, J_{12}, K_{10})\rangle =$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 0^{J} | \hat{g} | 1^{I} 1^{K} \rangle \langle B_{13} | \hat{1}^{+}_{\beta} | B_{1} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{12} | \hat{0}^{+}_{\alpha} | J_{0} \rangle \langle K_{10} | \hat{1}^{-}_{\alpha} | K_{0} \rangle t_{A_{1}} t_{B_{13}, I_{8}} t_{J_{12}, K_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7,J_{11},K_9)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_{14}|\hat{0}^+_\beta |B_1\rangle \langle I_7|\hat{0}^-_\beta |I_0\rangle \langle J_{11}|\hat{1}^+_\alpha |J_0\rangle \langle K_9|\hat{0}^-_\alpha |K_0\rangle t_{A_1} t_{B_{14},I_7} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_{11},K_9)\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{A_1} t_{B_{14},I_8} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7,J_{11},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_{11},K_{10})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|1^I1^K\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{14},I_8}t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_{11},K_9)\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|0^I0^K\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1}t_{B_{13},I_7}t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8,J_{11},K_9)\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^J |\hat{g}|1^I 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_9|\hat{0}^-_{\alpha}|K_0\rangle t_{A_1} t_{B_{13},I_8} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_{11},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8,J_{11},K_{10})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^J |\hat{g}| 1^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},I_8} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{14},J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_{14}|\hat{0}_\beta^+ |I_0\rangle \langle J_{12}|\hat{0}_\alpha^+ |J_0\rangle \langle K_7|\hat{0}_\beta^- |K_0\rangle t_{A_1} t_{B_9,J_{12}} t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{14},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_9|\hat{0}^-_\alpha |B_1\rangle \langle I_{14}|\hat{0}^+_\beta |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_8|\hat{1}^-_\beta |K_0\rangle t_{A_1} t_{B_9,J_{12}} t_{I_{14},K_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{14}, J_{12}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{10}, J_{12}} t_{I_{14}, K_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{14},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J1^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{13},J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_9|\hat{0}^-_\alpha |B_1\rangle \langle I_{13}|\hat{1}^+_\beta |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_7|\hat{0}^-_\beta |K_0\rangle t_{A_1} t_{B_9,J_{12}} t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{13},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|0^J 1^K \rangle \langle B_9|\hat{0}^-_\alpha |B_1\rangle \langle I_{13}|\hat{1}^+_\beta |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle \langle K_8|\hat{1}^-_\beta |K_0\rangle t_{A_1} t_{B_9,J_{12}} t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{13},J_{12},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle \langle K_7|\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{10},J_{12}} t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{13},J_{12},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{I}\sum_{K}\langle 1^B1^I|\hat{g}|0^J1^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{14},J_{11},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 0^K \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_7 |\hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_{14},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{14},J_{11},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 1^K \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_{14},K_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{14}, J_{11}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}| 1^J 0^K \rangle \langle B_{10}| \hat{1}_{\alpha}^- |B_1\rangle \langle I_{14}| \hat{0}_{\beta}^+ |I_0\rangle \langle J_{11}| \hat{1}_{\alpha}^+ |J_0\rangle \langle K_7| \hat{0}_{\beta}^- |K_0\rangle t_{A_1} t_{B_{10}, J_{11}} t_{I_{14}, K_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{14},J_{11},K_8)\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J1^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_8|\hat{1}^-_{\beta}|K_0\rangle t_{A_1}t_{B_{10},J_{11}}t_{I_{14},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{13},J_{11},K_7)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^B 1^I |\hat{g}| 1^J 0^K \rangle \langle B_9 |\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle \langle K_7 |\hat{0}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_{13},K_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{13},J_{11},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_8 |\hat{1}_{\beta}^- |K_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_{13},K_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{13}, J_{11}, K_7)\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I | \hat{g} | 1^J 0^K \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_{13} | \hat{1}_{\beta}^+ | I_0 \rangle \langle J_{11} | \hat{1}_{\alpha}^+ | J_0 \rangle \langle K_7 | \hat{0}_{\beta}^- | K_0 \rangle t_{A_1} t_{B_{10}, J_{11}} t_{I_{13}, K_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{13},J_{11},K_8)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_8|\hat{1}^-_{\beta}|K_0 \rangle t_{A_1} t_{B_{10},J_{11}} t_{I_{13},K_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_{12},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta}|I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,I_{14}} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_{12},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 0^I 0^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{A_1} t_{B_8,I_{14}} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,I_{14}} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 0^I 1^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0\rangle t_{A_1} t_{B_8,I_{14}} t_{J_{12},K_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_7, I_{13}, J_{12}, K_9)\rangle =$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J | \hat{g} | 1^I 0^K \rangle \langle B_7 | \hat{0}^-_\beta | B_1 \rangle \langle I_{13} | \hat{1}^+_\beta | I_0 \rangle \langle J_{12} | \hat{0}^+_\alpha | J_0 \rangle \langle K_9 | \hat{0}^-_\alpha | K_0 \rangle t_{A_1} t_{B_7, I_{13}} t_{J_{12}, K_9}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_{12},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 1^I 0^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,I_{13}} t_{J_{12},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,I_{13}} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_{12},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^J |\hat{g}|1^I 1^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,I_{13}} t_{J_{12},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,I_{14}} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 0^I 0^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0\rangle t_{A_1} t_{B_8,I_{14}} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,I_{14}} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 0^I 1^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0 \rangle \langle K_{10} |\hat{1}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,I_{14}} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,I_{13}} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_{11},K_9)\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0 \rangle \langle K_9 |\hat{0}^-_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,I_{13}} t_{J_{11},K_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^J |\hat{g}|1^I 1^K \rangle \langle B_7 |\hat{0}^-_\beta |B_1 \rangle \langle I_{13} |\hat{1}^+_\beta |I_0 \rangle \langle J_{11} |\hat{1}^+_\alpha |J_0 \rangle \langle K_{10} |\hat{1}^-_\alpha |K_0 \rangle t_{A_1} t_{B_7,I_{13}} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_{11},K_{10})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|1^I 1^K \rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle \langle K_{10}|\hat{1}^-_{\alpha}|K_0\rangle t_{A_1} t_{B_8,I_{13}} t_{J_{11},K_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_9,J_{12},K_{12})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J0^K\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^K0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_9,K_{12}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^J0^K\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_9,K_{12}}t_{I_9,J_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^K0^J\rangle\langle B_9|\hat{0}_\alpha^-|B_1\rangle\langle I_9|\hat{0}_\alpha^-|I_0\rangle\langle J_{12}|\hat{0}_\alpha^+|J_0\rangle\langle K_{12}|\hat{0}_\alpha^+|K_0\rangle t_{A_1}t_{B_9,K_{12}}t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_7,J_{14},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_7,K_{14}} \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_7,K_{14}} \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1 \rangle \langle I_7 |\hat{0}_{\beta}^- |I_0 \rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0 \rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0 \rangle t_{A_1} t_{B_7,K_{14}} t_{I_7,J_{14}} \end{split}$$

$$+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^{B} 0^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle B_{7} | \hat{0}_{\beta}^{-} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{7}, K_{14}} t_{I_{7}, J_{14}} t_{I_{7}, J_{14}} t_{A_{1}} t_{A_{1}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_7,J_{12},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_9 |\hat{0}_\alpha^- |B_1\rangle \langle I_7 |\hat{0}_\beta^- |I_0\rangle \langle J_{12} |\hat{0}_\alpha^+ |J_0\rangle \langle K_{14} |\hat{0}_\beta^+ |K_0\rangle t_{A_1} t_{B_9,J_{12}} t_{I_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{10},J_{12},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{12}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{12}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_8,J_{14},K_{14})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J0^K\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^+|K_0\rangle t_{A_1}t_{B_7,J_{14}}t_{I_8,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^K0^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^+|K_0\rangle t_{A_1}t_{B_7,J_{14}}t_{I_8,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J0^K\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^+|K_0\rangle t_{A_1}t_{B_7,K_{14}}t_{I_8,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^K0^J\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_{14}|\hat{0}_{\beta}^+|K_0\rangle t_{A_1}t_{B_7,K_{14}}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_8,J_{12},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_9 |\hat{0}_\alpha^- |B_1\rangle \langle I_8 |\hat{1}_\beta^- |I_0\rangle \langle J_{12} |\hat{0}_\alpha^+ |J_0\rangle \langle K_{14} |\hat{0}_\beta^+ |K_0\rangle t_{A_1} t_{B_9,J_{12}} t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_9,J_{12},K_{12})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J0^K\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_9,K_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^K0^J\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_9,K_{12}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J0^K\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_{10},K_{12}}t_{I_9,J_{12}} \end{split}$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 0^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle B_{10} | \hat{1}_{\alpha}^{-} | B_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{12} | \hat{0}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{10}, K_{12}} t_{I_{9}, J_{12}} t_{I_{9}, J_{12}} t_{A_{1}} t_{A_{1}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{7},J_{14},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{14}}t_{I_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{14}}t_{I_{7},K_{14}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{14}}t_{I_{7},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{14}}t_{I_{7},J_{14}}\\ \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_7,J_{12},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J0^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{10},J_{12},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_8,J_{14},K_{14})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_8,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_8,K_{14}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{14}}t_{I_8,J_{14}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{14}}t_{I_8,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_8, J_{12}, K_{14})\rangle =$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 1^{I} | \hat{g} | 0^{J} 0^{K} \rangle \langle B_{10} | \hat{1}_{\alpha}^{-} | B_{1} \rangle \langle I_{8} | \hat{1}_{\beta}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle \langle K_{14} | \hat{0}_{\beta}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{10}, J_{12}} t_{I_{8}, K_{14}} | \hat{I}_{A_{1}} t_{A_{1}} t$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{9},J_{12},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{9},K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{12}}t_{I_{9},K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{11}}t_{I_{9},J_{12}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{11}}t_{I_{9},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{7},I_{7},J_{14},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{7},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_7,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{12} |\hat{0}_{\alpha}^+ |J_0\rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_9,J_{12}} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{10},J_{12},K_{11})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J1^K\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_{10},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|1^K0^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_{10},K_{11}}\\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J1^K\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_9,K_{11}}t_{I_{10},J_{12}}\\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|1^K0^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_9,K_{11}}t_{I_{10},J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_7, I_8, J_{14}, K_{13})\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{14}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{8},J_{14}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{8},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_8,J_{12},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J1^K\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{A_1}t_{B_9,J_{12}}t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_9,J_{12},K_{11})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J1^K\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_9,K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K0^J\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle t_{A_1}t_{B_{10},J_{12}}t_{I_9,K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|0^J1^K\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle t_{A_1}t_{B_{10},K_{11}}t_{I_9,J_{12}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K0^J\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_1\rangle\langle I_9|\hat{0}_{\alpha}^{-}|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_0\rangle t_{A_1}t_{B_{10},K_{11}}t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{7},J_{14},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{14}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{14}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{13}}t_{I_{7},J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{13}}t_{I_{7},J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_7,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{10},J_{12}} t_{I_7,K_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{10}, J_{12}, K_{11})\rangle =$$

$$\begin{split} &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{12}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{J}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{10},J_{12}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}0^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_8,J_{14},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_8,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^K0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_8,K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{13}}t_{I_8,J_{14}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^K0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{13}}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_8,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^J 1^K \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{10},J_{12}} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{9},J_{11},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{9},K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{9},K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{12}}t_{I_{9},J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{12}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_7,J_{13},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 0^K \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_7,J_{13}} t_{I_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 0^K 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_7,J_{13}} t_{I_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 0^K \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_7,K_{14}} t_{I_7,J_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 0^K 1^J \rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0\rangle \langle K_{14} |\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_7,K_{14}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_7,J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_9 |\hat{0}_\alpha^- |B_1\rangle \langle I_7 |\hat{0}_\beta^- |I_0\rangle \langle J_{11} |\hat{1}_\alpha^+ |J_0\rangle \langle K_{14} |\hat{0}_\beta^+ |K_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_7,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{10},J_{11},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{10},K_{12}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{12}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{12}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{7},I_{8},J_{13},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{13}}t_{I_{8},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{13}}t_{I_{8},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{14}}t_{I_{8},J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{14}}t_{I_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_8,J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_9 |\hat{0}^-_{\alpha}|B_1 \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_9,J_{11}} t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{9},J_{11},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{9},K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{9},K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{9},J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_7,J_{13},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_7,K_{14}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_8,K_{14}} t_{I_7,J_{13}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_8,K_{14}} t_{I_7,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_7, J_{11}, K_{14})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle \langle K_{14}|\hat{0}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_{10}, J_{11}} t_{I_7, K_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{10},I_{10},J_{11},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{10},K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{10},K_{12}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{10},J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{12}|\hat{0}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{12}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{8},J_{13},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{8},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{8},K_{14}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}0^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{14}}t_{I_{8},J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|0^{K}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{14}|\hat{0}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{14}}t_{I_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_8,J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{10},J_{11}} t_{I_8,K_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{9},J_{11},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{9},K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{9},K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{11}}t_{I_{9},J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{11}}t_{I_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_7,J_{13},K_{13})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|1^J1^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|1^K1^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_7,J_{13}}t_{I_7,K_{13}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|1^J1^K\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_7,K_{13}}t_{I_7,J_{13}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|1^K1^J\rangle\langle B_7|\hat{0}_\beta^-|B_1\rangle\langle I_7|\hat{0}_\beta^-|I_0\rangle\langle J_{13}|\hat{1}_\beta^+|J_0\rangle\langle K_{13}|\hat{1}_\beta^+|K_0\rangle t_{A_1}t_{B_7,K_{13}}t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_7,J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_9 |\hat{0}_\alpha^- |B_1\rangle \langle I_7 |\hat{0}_\beta^- |I_0\rangle \langle J_{11} |\hat{1}_\alpha^+ |J_0\rangle \langle K_{13} |\hat{1}_\beta^+ |K_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{9},I_{10},J_{11},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{10},K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},J_{11}}t_{I_{10},K_{11}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{11}}t_{I_{10},J_{11}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{9},K_{11}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_8,J_{13},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_7 |\hat{0}^-_\beta |B_1 \rangle \langle I_8 |\hat{1}^-_\beta |I_0 \rangle \langle J_{13} |\hat{1}^+_\beta |J_0 \rangle \langle K_{13} |\hat{1}^+_\beta |K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},J_{13}}t_{I_{8},K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{8},J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{7},K_{13}}t_{I_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_8,J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle \langle K_{13} |\hat{1}_{\beta}^+ |K_0\rangle t_{A_1} t_{B_9,J_{11}} t_{I_8,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_9,J_{11},K_{11})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J1^K\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_{10},J_{11}}t_{I_9,K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K1^J\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_{10},J_{11}}t_{I_9,K_{11}} \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J1^K\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_{10},K_{11}}t_{I_9,J_{11}} \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K1^J\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_{10},K_{11}}t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{1},B_{8},I_{7},J_{13},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},J_{13}}t_{I_{7},K_{13}} \\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{13}}t_{I_{7},J_{13}} \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}0^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle\langle K_{13}|\hat{1}_{\beta}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{8},K_{13}}t_{I_{7},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_7,J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_{10},J_{11}} t_{I_7,K_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{10},J_{11},K_{11})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^J1^K\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},J_{11}}t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},J_{11}}t_{I_{10},K_{11}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{J}1^{K}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{10},J_{11}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^{B}1^{I}|\hat{g}|1^{K}1^{J}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle\langle K_{11}|\hat{1}_{\alpha}^{+}|K_{0}\rangle t_{A_{1}}t_{B_{10},K_{11}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_8,J_{13},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^J1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{13}}t_{I_8,K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^K1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,J_{13}}t_{I_8,K_{13}}\\ &+\frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^J1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{13}}t_{I_8,J_{13}}\\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^K1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{13}}t_{I_8,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_8, J_{11}, K_{13})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B 1^I|\hat{g}|1^J 1^K\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle\langle K_{13}|\hat{1}_{\beta}^+|K_0\rangle t_{A_1}t_{B_{10},J_{11}}t_{I_8,K_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_9,J_{12},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_7,K_{14}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_9,J_{12},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_8,K_{14}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{10},J_{12},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha} |I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0 \rangle \langle K_{14} |\hat{0}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_7,K_{14}} t_{I_{10},J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_8, I_{10}, J_{12}, K_{14})\rangle =$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 1^{I} | \hat{g} | 0^{K} 0^{J} \rangle \langle B_{8} | \hat{1}^{-}_{\beta} | B_{1} \rangle \langle I_{10} | \hat{1}^{-}_{\alpha} | I_{0} \rangle \langle J_{12} | \hat{0}^{+}_{\alpha} | J_{0} \rangle \langle K_{14} | \hat{0}^{+}_{\beta} | K_{0} \rangle t_{A_{1}} t_{B_{8}, K_{14}} t_{I_{10}, J_{12}} dt_{A_{1}} dt_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_9,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}| 1^K 0^J \rangle \langle B_7 |\hat{0}^-_\beta |B_1 \rangle \langle I_9 |\hat{0}^-_\alpha |I_0 \rangle \langle J_{12} |\hat{0}^+_\alpha |J_0 \rangle \langle K_{13} |\hat{1}^+_\beta |K_0 \rangle t_{A_1} t_{B_7,K_{13}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_9,J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_8 |\hat{1}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_8,K_{13}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{10},J_{12},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle \langle K_{13}|\hat{1}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_7,K_{13}} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{10},J_{12},K_{13})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|1^K0^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle\langle K_{13}|\hat{1}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{13}}t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_9,J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta}|K_0 \rangle t_{A_1} t_{B_7,K_{14}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_9,J_{11},K_{14})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_8 |\hat{1}^-_\beta |B_1\rangle \langle I_9 |\hat{0}^-_\alpha |I_0\rangle \langle J_{11} |\hat{1}^+_\alpha |J_0\rangle \langle K_{14} |\hat{0}^+_\beta |K_0\rangle t_{A_1} t_{B_8,K_{14}} t_{I_9,J_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_7, I_{10}, J_{11}, K_{14})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0 \rangle \langle K_{14}|\hat{0}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_7, K_{14}} t_{I_{10}, J_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{10},J_{11},K_{14})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K1^J\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle\langle K_{14}|\hat{0}^+_{\beta}|K_0\rangle t_{A_1}t_{B_8,K_{14}}t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_9,J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^K 1^J \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_7,K_{13}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_9,J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_8,K_{13}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{10},J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^K 1^J \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha} |I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_7,K_{13}} t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{10},J_{11},K_{13})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 1^J \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha} |I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0 \rangle \langle K_{13} |\hat{1}^+_{\beta} |K_0 \rangle t_{A_1} t_{B_8,K_{13}} t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_9,J_7,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},J_7} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_9,J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 0^K \rangle \langle B_{14} |\hat{0}^+_{\beta} |B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0 \rangle \langle J_8 |\hat{1}^-_{\beta} |J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0 \rangle t_{A_1} t_{B_{14},J_8} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{10},J_7,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{14}|\hat{0}^+_\beta |B_1\rangle \langle I_{10}|\hat{1}^-_\alpha |I_0\rangle \langle J_7|\hat{0}^-_\beta |J_0\rangle \langle K_{12}|\hat{0}^+_\alpha |K_0\rangle t_{A_1} t_{B_{14},J_7} t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_{10},J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},J_8} t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_9,J_7,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_7} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_9,J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_9,K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_9,K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_9,K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_9,K_{12}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle I_0 \rangle$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_{10}, J_7, K_{12})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13}, J_7} t_{I_{10}, K_{12}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_{10}, J_8, K_{12})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13}, J_8} t_{I_{10}, K_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_9,J_7,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},J_7} t_{I_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},J_7} t_{I_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},J_7} t_{I_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},J_7} t_{I_9,K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle I_7|\hat{0}^-_{\beta}|I_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_9,J_8,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^J 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},J_8} t_{I_9,K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{14}, I_{10}, J_7, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I | \hat{g} | 0^J 1^K \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_{10} | \hat{1}^-_{\alpha} | I_0 \rangle \langle J_7 | \hat{0}^-_{\beta} | J_0 \rangle \langle K_{11} | \hat{1}^+_{\alpha} | K_0 \rangle t_{A_1} t_{B_{14}, J_7} t_{I_{10}, K_{11}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{14}, I_{10}, J_8, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I | \hat{g} | 1^J 1^K \rangle \langle B_{14} | \hat{0}^+_{\beta} | B_1 \rangle \langle I_{10} | \hat{1}^-_{\alpha} | I_0 \rangle \langle J_8 | \hat{1}^-_{\beta} | J_0 \rangle \langle K_{11} | \hat{1}^+_{\alpha} | K_0 \rangle t_{A_1} t_{B_{14}, J_8} t_{I_{10}, K_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_9,J_7,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_7} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_9,J_8,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_9,K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_{10}, J_7, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I | \hat{g} | 0^J 1^K \rangle \langle B_{13} | \hat{1}^+_{\beta} | B_1 \rangle \langle I_{10} | \hat{1}^-_{\alpha} | I_0 \rangle \langle J_7 | \hat{0}^-_{\beta} | J_0 \rangle \langle K_{11} | \hat{1}^+_{\alpha} | K_0 \rangle t_{A_1} t_{B_{13}, J_7} t_{I_{10}, K_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_{10},J_8,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle I_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},J_8} t_{I_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle I_{11}|I_0 \rangle \langle I_{11}|I_0 \rangle \langle I_1 |I_0 \rangle \langle$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{14}, I_7, J_9, K_{12})\rangle =$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J | \hat{g} | 0^I 0^K \rangle \langle B_{14} | \hat{0}^+_\beta | B_1 \rangle \langle I_7 | \hat{0}^-_\beta | I_0 \rangle \langle J_9 | \hat{0}^-_\alpha | J_0 \rangle \langle K_{12} | \hat{0}^+_\alpha | K_0 \rangle t_{A_1} t_{B_{14}, I_7} t_{J_9, K_{12}} \rangle dt_{A_1} t_{A_1} t_{A_2} t_{A_3} t_{A_4} t_{A_5} t_{A$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_9,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}| 1^I 0^K \rangle \langle B_{14}|\hat{0}^+_\beta |B_1\rangle \langle I_8|\hat{1}^-_\beta |I_0\rangle \langle J_9|\hat{0}^-_\alpha |J_0\rangle \langle K_{12}|\hat{0}^+_\alpha |K_0\rangle t_{A_1} t_{B_{14},I_8} t_{J_9,K_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{14}, I_7, J_{10}, K_{12})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14}, I_7} t_{J_{10}, K_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},I_8} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_9,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 0^I 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_7|\hat{0}^-_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle \langle K_{12}|\hat{0}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_{13},I_7} t_{J_9,K_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_8, J_9, K_{12})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 1^I 0^K \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1\rangle \langle I_8| \hat{1}^-_{\beta} |I_0\rangle \langle J_9| \hat{0}^-_{\alpha} |J_0\rangle \langle K_{12}| \hat{0}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_{13}, I_8} t_{J_9, K_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_{10},K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 0^I 0^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{10},K_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_8, J_{10}, K_{12})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1\rangle \langle I_8| \hat{1}^-_{\beta} |I_0\rangle \langle J_{10}| \hat{1}^-_{\alpha} |J_0\rangle \langle K_{12}| \hat{0}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_{13}, I_8} t_{J_{10}, K_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_7,J_9,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14},I_7} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_9,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta} |B_1\rangle \langle I_8|\hat{1}^-_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_{14},I_8} t_{J_9,K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{14}, I_7, J_{10}, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{14}, I_7} t_{J_{10}, K_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{14},I_8,J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|1^I1^K\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_{14},I_8}t_{J_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_9,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_7|\hat{0}^-_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_{13},I_7} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_8,J_9,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_8|\hat{1}^-_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle \langle K_{11}|\hat{1}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_{13},I_8} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{13},I_7,J_{10},K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{13},I_7} t_{J_{10},K_{11}} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle I_1 |\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_1,I_1} \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle I_7|I_0 \rangle \langle I_7|I_0 \rangle \langle I_7|I_0 \rangle \langle I_7|I_0 \rangle \langle I_7|I$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{13}, I_8, J_{10}, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 1^I 1^K \rangle \langle B_{13}| \hat{1}^+_{\beta} |B_1\rangle \langle I_8| \hat{1}^-_{\beta} |I_0\rangle \langle J_{10}| \hat{1}^-_{\alpha} |J_0\rangle \langle K_{11}| \hat{1}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_{13}, I_8} t_{J_{10}, K_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{14},J_7,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_9|\hat{0}_\alpha^- |B_1\rangle \langle I_{14}|\hat{0}_\beta^+ |I_0\rangle \langle J_7|\hat{0}_\beta^- |J_0\rangle \langle K_{12}|\hat{0}_\alpha^+ |K_0\rangle t_{A_1} t_{B_9,K_{12}} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{14},J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0 \rangle \langle J_8 |\hat{1}_{\beta}^- |J_0 \rangle \langle K_{12} |\hat{0}_{\alpha}^+ |K_0 \rangle t_{A_1} t_{B_9,K_{12}} t_{I_{14},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{14}, J_7, K_{12})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I | \hat{g} | 0^K 0^J \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_{14} | \hat{0}_{\beta}^+ | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^- | J_0 \rangle \langle K_{12} | \hat{0}_{\alpha}^+ | K_0 \rangle t_{A_1} t_{B_{10}, K_{12}} t_{I_{14}, J_7}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{14}, J_8, K_{12})\rangle =$$

$$+\frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_{10}, K_{12}} t_{I_{14}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{13},J_7,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_9,K_{12}} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{13},J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{I} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_9,K_{12}} t_{I_{13},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{13}, J_7, K_{12})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_{10}, K_{12}} t_{I_{13}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{13},J_8,K_{12})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{10},K_{12}} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{14},J_7,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}| 1^K 0^J \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_9,K_{11}} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{14},J_8,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}| 1^K 1^J \rangle \langle B_9 |\hat{0}_\alpha^- |B_1\rangle \langle I_{14} |\hat{0}_\beta^+ |I_0\rangle \langle J_8 |\hat{1}_\beta^- |J_0\rangle \langle K_{11} |\hat{1}_\alpha^+ |K_0\rangle t_{A_1} t_{B_9,K_{11}} t_{I_{14},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{14}, J_7, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I | \hat{g} | 1^K 0^J \rangle \langle B_{10} | \hat{1}_{\alpha}^- | B_1 \rangle \langle I_{14} | \hat{0}_{\beta}^+ | I_0 \rangle \langle J_7 | \hat{0}_{\beta}^- | J_0 \rangle \langle K_{11} | \hat{1}_{\alpha}^+ | K_0 \rangle t_{A_1} t_{B_{10}, K_{11}} t_{I_{14}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_{14},J_8,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|1^K 1^J \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{10},K_{11}} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_{13},J_7,K_{11})\rangle = \\ &+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}| 1^K 0^J \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0 \rangle \langle J_7 |\hat{0}_{\beta}^- |J_0 \rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0 \rangle t_{A_1} t_{B_9,K_{11}} t_{I_{13},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_9, I_{13}, J_8, K_{11})\rangle =$$

$$+ \tfrac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I | \hat{g} | 1^K 1^J \rangle \langle B_9 | \hat{0}_\alpha^- | B_1 \rangle \langle I_{13} | \hat{1}_\beta^+ | I_0 \rangle \langle J_8 | \hat{1}_\beta^- | J_0 \rangle \langle K_{11} | \hat{1}_\alpha^+ | K_0 \rangle t_{A_1} t_{B_9, K_{11}} t_{I_{13}, J_8} \rangle dt_{A_1} t_{A_2} t_{A_3} t_{A_4} t_{A_5} t_{A$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{13}, J_7, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{10}, K_{11}} t_{I_{13}, J_7}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_{13}, J_8, K_{11})\rangle =$$

$$+ \frac{-1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_{10}, K_{11}} t_{I_{13}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_9,K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^J |\hat{g}|0^I 0^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,I_{14}} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_9,K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^J|\hat{g}|0^I0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_9,K_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_7, I_{14}, J_{10}, K_{12})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^J |\hat{g}|0^I 0^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_7, I_{14}} t_{J_{10}, K_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_{10},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^J|\hat{g}|0^I0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_8,I_{14}}t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_9,K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^J |\hat{g}| 1^I 0^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,I_{13}} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_9,K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^J |\hat{g}|1^I 0^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,I_{13}} t_{J_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_{10},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_7 |\hat{0}^-_\beta |B_1 \rangle \langle I_{13} |\hat{1}^+_\beta |I_0 \rangle \langle J_{10} |\hat{1}^-_\alpha |J_0 \rangle \langle K_{12} |\hat{0}^+_\alpha |K_0 \rangle t_{A_1} t_{B_7,I_{13}} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_{10},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^J |\hat{g}| 1^I 0^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,I_{13}} t_{J_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_9,K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,I_{14}} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_9,K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}|0^I 1^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_8,I_{14}} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{14},J_{10},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_7 |\hat{0}^-_\beta |B_1 \rangle \langle I_{14} |\hat{0}^+_\beta |I_0 \rangle \langle J_{10} |\hat{1}^-_\alpha |J_0 \rangle \langle K_{11} |\hat{1}^+_\alpha |K_0 \rangle t_{A_1} t_{B_7,I_{14}} t_{J_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{14},J_{10},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 1^J |\hat{g}|0^I 1^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,I_{14}} t_{J_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_9,K_{11})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,I_{13}} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{13},J_9,K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^J |\hat{g}| 1^I 1^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_8,I_{13}} t_{J_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{13},J_{10},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^J|\hat{g}|1^I1^K\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_7,I_{13}}t_{J_{10},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_8, I_{13}, J_{10}, K_{11})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^J |\hat{g}| 1^I 1^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0\rangle t_{A_1} t_{B_8, I_{13}} t_{J_{10}, K_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_7,J_{14},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B0^I|\hat{g}|0^K0^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle\langle K_{12}|\hat{0}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_9,K_{12}}t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_8,J_{14},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|0^K 0^J \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{12} |\hat{0}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_9,K_{12}} t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_7,J_{14},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 0^J \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{10},K_{12}} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_8,J_{14},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^K0^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},K_{12}}t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_7,J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_9 |\hat{0}^-_\alpha |B_1 \rangle \langle I_7 |\hat{0}^-_\beta |I_0 \rangle \langle J_{13} |\hat{1}^+_\beta |J_0 \rangle \langle K_{12} |\hat{0}^+_\alpha |K_0 \rangle t_{A_1} t_{B_9,K_{12}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_8,J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_9 |\hat{0}^-_{\alpha}|B_1 \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta}|J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_9,K_{12}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_7,J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^K 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{12}|\hat{0}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_{10},K_{12}} t_{I_7,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_8, J_{13}, K_{12})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|0^K 1^J \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle \langle K_{12}|\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{10}, K_{12}} t_{I_8, J_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_7,J_{14},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|1^K 0^J \rangle \langle B_9 |\hat{0}_\alpha^- |B_1\rangle \langle I_7 |\hat{0}_\beta^- |I_0\rangle \langle J_{14} |\hat{0}_\beta^+ |J_0\rangle \langle K_{11} |\hat{1}_\alpha^+ |K_0\rangle t_{A_1} t_{B_9,K_{11}} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_8,J_{14},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}| 1^K 0^J \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle \langle K_{11} |\hat{1}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_9,K_{11}} t_{I_8,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_7, J_{14}, K_{11})\rangle =$$

$$+ \tfrac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^{B} 0^{I} | \hat{g} | 1^{K} 0^{J} \rangle \langle B_{10} | \hat{1}_{\alpha}^{-} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle \langle K_{11} | \hat{1}_{\alpha}^{+} | K_{0} \rangle t_{A_{1}} t_{B_{10}, K_{11}} t_{I_{7}, J_{14}} dt_{A_{1}} dt_$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_8,J_{14},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 0^J \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle \langle K_{11}|\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_{10},K_{11}} t_{I_8,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_9, I_7, J_{13}, K_{11})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{K}\langle 0^B 0^I|\hat{g}|1^K 1^J\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_7|\hat{0}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle\langle K_{11}|\hat{1}_{\alpha}^+|K_0\rangle t_{A_1}t_{B_9, K_{11}}t_{I_7, J_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_9,I_8,J_{13},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^K 1^J \rangle \langle B_9 |\hat{0}^-_{\alpha}|B_1 \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_9,K_{11}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_{10},I_7,J_{13},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^K1^J\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_{10},K_{11}}t_{I_7,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_{10}, I_8, J_{13}, K_{11})\rangle =$$

$$+\frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 1^I |\hat{g}|1^K 1^J \rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle \langle K_{11}|\hat{1}_{\alpha}^+ |K_0\rangle t_{A_1} t_{B_{10}, K_{11}} t_{I_8, J_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_9,J_{14},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_7 |\hat{0}^-_\beta |B_1 \rangle \langle I_9 |\hat{0}^-_\alpha |I_0 \rangle \langle J_{14} |\hat{0}^+_\beta |J_0 \rangle \langle K_{12} |\hat{0}^+_\alpha |K_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_9,J_{14},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|0^J 0^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,J_{14}} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{10},J_{14},K_{12})\rangle = \\ &+ \frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J0^K\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_7,J_{14}}t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{10},J_{14},K_{12})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B1^I|\hat{g}|0^J0^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{12}|\hat{0}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_8,J_{14}}t_{I_{10},K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_9,J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 0^I |\hat{g}| 1^J 0^K \rangle \langle B_7 |\hat{0}^-_\beta |B_1 \rangle \langle I_9 |\hat{0}^-_\alpha |I_0 \rangle \langle J_{13} |\hat{1}^+_\beta |J_0 \rangle \langle K_{12} |\hat{0}^+_\alpha |K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_9,J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 1^B 0^I |\hat{g}|1^J 0^K \rangle \langle B_8 |\hat{1}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta}|J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_9,K_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{10},J_{13},K_{12})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 1^I |\hat{g}|1^J 0^K \rangle \langle B_7 |\hat{0}^-_{\beta} |B_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha} |I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0 \rangle \langle K_{12} |\hat{0}^+_{\alpha} |K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_{10},K_{12}} \end{split}$$

$$\langle (A_1, B_1) | \hat{H} | (A_1, B_8, I_{10}, J_{13}, K_{12}) \rangle =$$

$$+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 1^I | \hat{g} | 1^J 0^K \rangle \langle B_8 | \hat{1}^-_{\beta} | B_1 \rangle \langle I_{10} | \hat{1}^-_{\alpha} | I_0 \rangle \langle J_{13} | \hat{1}^+_{\beta} | J_0 \rangle \langle K_{12} | \hat{0}^+_{\alpha} | K_0 \rangle t_{A_1} t_{B_8, J_{13}} t_{I_{10}, K_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_9,J_{14},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,J_{14}} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_9,J_{14},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 1^B 0^I |\hat{g}|0^J 1^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,J_{14}} t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{10},J_{14},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 0^B1^I|\hat{g}|0^J1^K\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_7,J_{14}}t_{I_{10},K_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_1, B_8, I_{10}, J_{14}, K_{11})\rangle =$$

$$+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B 1^I|\hat{g}|0^J 1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_8, J_{14}}t_{I_{10}, K_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_9,J_{13},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_9,K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_9,K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_9,K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_9,K_{11}} \\ &+ \frac{1}{12} \sum_{I} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle I_{13} |\hat{1}^+_{\beta}|J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_9,K_{11}} \\ &+ \frac{1}{12} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle I_{13} |\hat{1}^+_{\beta}|I_0 \rangle \langle I_{13} |\hat{1}^+_{\alpha}|K_0 \rangle t_{A_1} t_{A_1} t_{A_2} \\ &+ \frac{1}{12} \sum_{J} \sum_{K} \langle 0^B 0^I |\hat{g}|1^J 1^K \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle I_{13} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|B_1 \rangle \langle$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_9,J_{13},K_{11})\rangle = \\ &+\frac{1}{12}\sum_{I}\sum_{J}\sum_{K}\langle 1^B0^I|\hat{g}|1^J1^K\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle\langle K_{11}|\hat{1}^+_{\alpha}|K_0\rangle t_{A_1}t_{B_8,J_{13}}t_{I_9,K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_7,I_{10},J_{13},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_I \sum_J \sum_K \langle 0^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_7 |\hat{0}^-_\beta |B_1 \rangle \langle I_{10}|\hat{1}^-_\alpha |I_0 \rangle \langle J_{13}|\hat{1}^+_\beta |J_0 \rangle \langle K_{11}|\hat{1}^+_\alpha |K_0 \rangle t_{A_1} t_{B_7,J_{13}} t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_1,B_8,I_{10},J_{13},K_{11})\rangle = \\ &+ \frac{1}{12} \sum_{I} \sum_{K} \langle 1^B 1^I |\hat{g}|1^J 1^K \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha} |I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0 \rangle \langle K_{11} |\hat{1}^+_{\alpha} |K_0 \rangle t_{A_1} t_{B_8,J_{13}} t_{I_{10},K_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{12},I_{9},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{9}}t_{B_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{9}}t_{B_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{12},I_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{12},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{14},I_{7},J_{7})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{14},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{14},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{14},I_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{14},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{14},I_9,J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{12},I_9} t_{B_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{12},I_{9},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{9}}t_{B_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{9}}t_{B_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{12},I_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{12},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{14},I_7,J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},I_7}t_{B_{14},J_8}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|1^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},I_7}t_{B_{14},J_8}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_{14},I_7} \end{split}$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{14},I_{7}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{14},I_9,J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{12},I_9} t_{B_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{12},I_{10},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{12},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{14},I_{8},J_{7})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{14},J_{7}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{14},J_{7}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{14},I_{8}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{14},I_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{14},I_{10},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|1^I0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^+|B_1\rangle\langle I_{10}|\hat{1}_{\alpha}^-|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_{12},I_{10}}t_{B_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{12},I_{10},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{12},J_{10}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{12},J_{10}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{12},I_{10}} \end{split}$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{12},I_{10}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{14},I_{8},J_{8})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{14},I_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{14},I_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_{14}, I_{10}, J_8)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^I 1^J\rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{12}, I_{10}}t_{B_{14}, J_8}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{11},I_{9},J_{9})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{9}}t_{B_{11},J_{9}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{9}}t_{B_{11},J_{9}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{11},I_{9}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{11},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{13},I_{7},J_{7})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{13},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{13},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{13},I_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{13},I_{7}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_{13}, I_9, J_7)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{12},I_{9}}t_{B_{13},J_{7}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{11},I_9,J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},I_9}t_{B_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|1^J0^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},I_9}t_{B_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}}t_{B_{11},I_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|1^J0^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}}t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{13},I_{7},J_{8})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{13},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{13},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{13},I_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{13},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{13},I_9,J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{12},I_9}t_{B_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{11},I_{10},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{11},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{11},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{11},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{11},I_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_{13}, I_8, J_7)\rangle =$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{13},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{13},J_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{13},I_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{8}|\hat{1}_{\beta}^{-}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{13},I_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{13},I_{10},J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^+ |B_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle t_{A_{12},I_{10}} t_{B_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{11},I_{10},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{11},J_{10}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{11},J_{10}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{11},I_{10}}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{13},I_{8},J_{8})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{13},J_{8}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{14},I_{8}}t_{B_{13},J_{8}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{13},I_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{14}|\hat{0}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{14},J_{8}}t_{B_{13},I_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{13},I_{10},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^+ |B_1\rangle \langle I_{10} |\hat{1}_{\alpha}^- |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle t_{A_{12},I_{10}} t_{B_{13},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_{12}, I_9, J_9)\rangle =$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{12},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{12},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{12},I_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{12},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{14},I_{7},J_{7})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{14},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{14},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{7}}t_{B_{14},I_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{7}}t_{B_{14},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{14},I_9,J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{11},I_9} t_{B_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{12},I_{9},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{12},I_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{12},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{14},I_{7},J_{8})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{14},J_{8}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{14},J_{8}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{14},I_{7}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{7}|\hat{0}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{14},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{14},I_9,J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{11},I_9} t_{B_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{12},I_{10},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{12},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{14},I_{8},J_{7})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{8}}t_{B_{14},J_{7}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{8}}t_{B_{14},J_{7}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{7}}t_{B_{14},I_{8}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{14}|\hat{0}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{7}}t_{B_{14},I_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{14},I_{10},J_7)\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}| 1^I 0^J \rangle \langle A_{11}|\hat{1}^+_\alpha |A_1\rangle \langle B_{14}|\hat{0}^+_\beta |B_1\rangle \langle I_{10}|\hat{1}^-_\alpha |I_0\rangle \langle J_7|\hat{0}^-_\beta |J_0\rangle t_{A_{11},I_{10}} t_{B_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{12},I_{10},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{12},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{14},I_8,J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_{14},J_8}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_{14},J_8}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_{14},I_8}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{14},I_{10},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}| 1^I 1^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_{11},I_{10}} t_{B_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{11},I_{9},J_{9})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{11},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{11},J_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{11},I_{9}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{11},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{13},I_7,J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^I0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_{13},J_7}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^J0^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_{13},J_7}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^I0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_{13},I_7}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^J0^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_{13},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{13},I_9,J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{11},I_9} t_{B_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{11},I_{9},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{11},I_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{11},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{13},I_{7},J_{8})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{13},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{13},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{13},I_{7}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{13},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{13},I_9,J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{11},I_9} t_{B_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{11},I_{10},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{11},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{11},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{11},I_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{13},I_8,J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{13},I_8} t_{B_{13},J_7} \end{split}$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 1^{B} | \hat{g} | 0^{J} 1^{I} \rangle \langle A_{13} | \hat{1}^{+}_{\beta} | A_{1} \rangle \langle B_{13} | \hat{1}^{+}_{\beta} | B_{1} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle t_{A_{13},I_{8}} t_{B_{13},J_{7}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 1^{B} | \hat{g} | 1^{I} 0^{J} \rangle \langle A_{13} | \hat{1}^{+}_{\beta} | A_{1} \rangle \langle B_{13} | \hat{1}^{+}_{\beta} | B_{1} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle t_{A_{13},J_{7}} t_{B_{13},I_{8}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A} 1^{B} | \hat{g} | 0^{J} 1^{I} \rangle \langle A_{13} | \hat{1}^{+}_{\beta} | A_{1} \rangle \langle B_{13} | \hat{1}^{+}_{\beta} | B_{1} \rangle \langle I_{8} | \hat{1}^{-}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle t_{A_{13},J_{7}} t_{B_{13},I_{8}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_{13}, I_{10}, J_7)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^B|\hat{g}|1^I 0^J\rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{11}, I_{10}}t_{B_{13}, J_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{11},I_{10},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{11},J_{10}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{11},J_{10}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{11},I_{10}}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{13},B_{13},I_{8},J_{8})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{8}}t_{B_{13},J_{8}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},I_{8}}t_{B_{13},J_{8}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{13},I_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{13}|\hat{1}^{+}_{\beta}|B_{1}\rangle\langle I_{8}|\hat{1}^{-}_{\beta}|I_{0}\rangle\langle J_{8}|\hat{1}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{13},I_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{13},I_{10},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 1^I 1^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_{11},I_{10}} t_{B_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{14},I_7,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{12},J_9} t_{B_{14},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{14},I_8,J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^J1^I\rangle\langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12},J_9}t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{14},I_7,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^J 0^I \rangle \langle A_{12} |\hat{0}_{\alpha}^+|A_1\rangle \langle B_{14} |\hat{0}_{\beta}^+|B_1\rangle \langle I_7 |\hat{0}_{\beta}^-|I_0\rangle \langle J_{10} |\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}} t_{B_{14},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{14},I_8,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^J 1^I \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0\rangle t_{A_{12},J_{10}} t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{13},I_7,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{12},J_9} t_{B_{13},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{13},I_8,J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12},J_9}t_{B_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{13},I_7,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 0^I \rangle \langle A_{12} |\hat{0}_{\alpha}^+|A_1\rangle \langle B_{13} |\hat{1}_{\beta}^+|B_1\rangle \langle I_7 |\hat{0}_{\beta}^-|I_0\rangle \langle J_{10} |\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}} t_{B_{13},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{13},I_8,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 1^I \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^+ |B_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{10} |\hat{1}_{\alpha}^- |J_0\rangle t_{A_{12},J_{10}} t_{B_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{14},I_7,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{11},J_9} t_{B_{14},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{14},I_8,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9} t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{14},I_7,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_{14},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{14},I_8,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^J 1^I \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle t_{A_{11},J_{10}} t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{13},I_7,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9} t_{B_{13},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{13},I_8,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{11},J_9} t_{B_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{13},I_7,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},J_{10}} t_{B_{13},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{13},I_8,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 1^J 1^I \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle t_{A_{11},J_{10}} t_{B_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_{12},J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},B_9}t_{I_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^J0^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},B_9}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},J_9}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^J0^I\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_1\rangle\langle B_9|\hat{0}_{\alpha}^{-}|B_1\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_0\rangle\langle J_9|\hat{0}_{\alpha}^{-}|J_0\rangle t_{A_{12},J_9}t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_{14},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_{14},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_{12},B_9}t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_{12},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle t_{A_{12},B_9} t_{I_{12},J_{10}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle t_{A_{12},B_9} t_{I_{12},J_{10}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle t_{A_{12},J_{10}} t_{B_9,I_{12}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle t_{A_{12},J_{10}} t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_{14},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|1^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|1^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_{14},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_{12},B_9} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{10},I_{12},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{12},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{10},I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_{14},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_8,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{10},I_{14},J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle B_{10} |\hat{1}_{\alpha}^- |B_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle t_{A_{12},B_{10}} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{10},I_{12},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{10},I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_{14},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|1^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_8,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|1^J0^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{10},I_{14},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle B_{10} |\hat{1}_{\alpha}^- |B_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle t_{A_{12},B_{10}} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_{11},J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_{12},B_9}t_{I_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|0^J 1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_{12},B_9}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_{12},J_9}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|0^J 1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_9|\hat{0}_{\alpha}^-|J_0\rangle t_{A_{12},J_9}t_{B_9,I_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{7},I_{13},J_{7})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},B_{7}}t_{I_{13},J_{7}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},B_{7}}t_{I_{13},J_{7}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{14},J_{7}}t_{B_{7},I_{13}} \end{split}$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{A} 0^{B} | \hat{g} | 0^{J} 1^{I} \rangle \langle A_{14} | \hat{0}^{+}_{\beta} | A_{1} \rangle \langle B_{7} | \hat{0}^{-}_{\beta} | B_{1} \rangle \langle I_{13} | \hat{1}^{+}_{\beta} | I_{0} \rangle \langle J_{7} | \hat{0}^{-}_{\beta} | J_{0} \rangle t_{A_{14}, J_{7}} t_{B_{7}, I_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_{13},J_7)\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_{12}|\hat{0}^+_\alpha |A_1\rangle \langle B_9|\hat{0}^-_\alpha |B_1\rangle \langle I_{13}|\hat{1}^+_\beta |I_0\rangle \langle J_7|\hat{0}^-_\beta |J_0\rangle t_{A_{12},B_9} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{9},I_{11},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},B_{9}}t_{I_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},B_{9}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{9},I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{10}}t_{B_{9},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_{13},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^J 1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^J 1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_{13},J_8)\rangle = \\ &+ \tfrac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_9|\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{12},B_9} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{10},I_{11},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{11},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{12},J_{9}}t_{B_{10},I_{11}} \end{split}$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B | \hat{g} | 0^J 1^I \rangle \langle A_{12} | \hat{0}^+_\alpha | A_1 \rangle \langle B_{10} | \hat{1}^-_\alpha | B_1 \rangle \langle I_{11} | \hat{1}^+_\alpha | I_0 \rangle \langle J_9 | \hat{0}^-_\alpha | J_0 \rangle t_{A_{12},J_9} t_{B_{10},I_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_{13},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_{13},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^J 1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^J 1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7}t_{B_8,I_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_{10}, I_{13}, J_7)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle \langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle \langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle \langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_{12}, B_{10}}t_{I_{13}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{10},I_{11},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},B_{10}}t_{I_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^J 1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},B_{10}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}}t_{B_{10},I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^J 1^I\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_{10}|\hat{1}_{\alpha}^-|J_0\rangle t_{A_{12},J_{10}}t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_{13},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^J 1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^J 1^I\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8}t_{B_8,I_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_{10}, I_{13}, J_8)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{13},J_{8}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_{12},J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},B_9}t_{I_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J0^I\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},B_9}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J0^I\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9}t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_{14},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J0^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_7,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J0^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_{14},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_{11},B_9}t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_{12},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},B_9}t_{I_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^J0^I\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},B_9}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},J_{10}}t_{B_9,I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^J0^I\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},J_{10}}t_{B_9,I_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_7, I_{14}, J_8)\rangle =$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},B_{7}}t_{I_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},B_{7}}t_{I_{14},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{7},I_{14}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{13},J_{8}}t_{B_{7},I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_{14},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_9|\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{11},B_9} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{10},I_{12},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{12},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{10},I_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_{14},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^J0^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_8,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^J0^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{10},I_{14},J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^B 0^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_{10}|\hat{1}_{\alpha}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle t_{A_{11},B_{10}} t_{I_{14},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_{10}, I_{12}, J_{10})\rangle =$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{12},J_{10}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{12},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{10},I_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_{14},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^J0^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_8,I_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^J0^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_8,I_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_{10}, I_{14}, J_8)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 0^I|\hat{g}|1^B 1^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{11}, B_{10}}t_{I_{14}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_{11},J_9)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B0^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},B_9}t_{I_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J1^I\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},B_9}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B0^J\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9}t_{B_9,I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J1^I\rangle\langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9}t_{B_9,I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_{13},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_{13},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_{13},J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_9|\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{11},B_9} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{9},I_{11},J_{10})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},B_{9}}t_{I_{11},J_{10}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},B_{9}}t_{I_{11},J_{10}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{9},I_{11}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{9},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_{13},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_7,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_{13},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_9|\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{11},B_9} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{10},I_{11},J_{9})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{11},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{10},I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{9}}t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_{13},J_7)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_{13},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7}t_{B_8,I_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_{10}, I_{13}, J_7)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^B 0^J\rangle \langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle \langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle \langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_{11},B_{10}}t_{I_{13},J_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{10},I_{11},J_{10})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{10},I_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{11},J_{10}}t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_{13},J_8)\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_8,I_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^J1^I\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{13},J_8}t_{B_8,I_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_{10}, I_{13}, J_8)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^B 1^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_{11},B_{10}}t_{I_{13},J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_7,I_{14},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_{12}|\hat{0}^+_\alpha |A_1\rangle \langle B_7|\hat{0}^-_\beta |B_1\rangle \langle I_{14}|\hat{0}^+_\beta |I_0\rangle \langle J_9|\hat{0}^-_\alpha |J_0\rangle t_{A_{12},J_9} t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_8,I_{14},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12},J_9} t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_7,I_{14},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_7|\hat{0}^-_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{12},J_{10}} t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_8,I_{14},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|1^J 0^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{12},J_{10}} t_{B_8,I_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_7, I_{13}, J_9)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12}, J_9} t_{B_7, I_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_8,I_{13},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{12},J_9} t_{B_8,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_7,I_{13},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 1^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_7|\hat{0}^-_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{12},J_{10}} t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_8,I_{13},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|1^J 1^I \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1 \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{12},J_{10}} t_{B_8,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_7,I_{14},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9} t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_8,I_{14},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9} t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_7,I_{14},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_7|\hat{0}^-_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{11},J_{10}} t_{B_7,I_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_8, I_{14}, J_{10})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^J 0^I \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_{10}|\hat{1}_{\alpha}^- |J_0\rangle t_{A_{11}, J_{10}} t_{B_8, I_{14}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_7, I_{13}, J_9)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha} |A_1\rangle \langle B_7|\hat{0}^-_{\beta} |B_1\rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle t_{A_{11}, J_9} t_{B_7, I_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_8,I_{13},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{I} \langle 1^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{11},J_9} t_{B_8,I_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_7, I_{13}, J_{10})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha} |A_1\rangle \langle B_7|\hat{0}^-_{\beta} |B_1\rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle t_{A_{11}, J_{10}} t_{B_7, I_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_8,I_{13},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^J 1^I \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{11},J_{10}} t_{B_8,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_9,J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{12},B_9}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{12},B_9}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{12},I_9}t_{B_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{12},I_9}t_{B_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_7,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},I_7}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},I_7}t_{B_7,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_9, I_7, J_{14})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_7|\hat{0}^+_{\beta}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{12}, B_9} t_{I_7, J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle t_{A_{12},B_9} t_{I_{10},J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^I 0^J \rangle \langle A_{12}|\hat{0}_{\alpha}^+ |A_1\rangle \langle B_9|\hat{0}_{\alpha}^- |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle t_{A_{12},B_9} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{9},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^I 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},I_8}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^I 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},I_8}t_{B_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_{12}|\hat{0}^+_\alpha |A_1\rangle \langle B_9|\hat{0}^-_\alpha |B_1\rangle \langle I_8|\hat{1}^-_\beta |I_0\rangle \langle J_{14}|\hat{0}^+_\beta |J_0\rangle t_{A_{12},B_9} t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{10},I_9,J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{12},B_{10}}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^I0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{12},B_{10}}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{12},I_9}t_{B_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^I0^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_{10}|\hat{1}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{12},I_9}t_{B_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_7,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^I0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},I_7}t_{B_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^I0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},I_7}t_{B_8,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_{10}, I_7, J_{14})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_{12} |\hat{0}^+_{\alpha} | A_1 \rangle \langle B_{10} |\hat{1}^-_{\alpha} | B_1 \rangle \langle I_7 |\hat{0}^-_{\beta} | I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} | J_0 \rangle t_{A_{12}, B_{10}} t_{I_7, J_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{10},I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},I_8}t_{B_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 0^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{14},I_8}t_{B_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{10},I_8,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^B 0^J \rangle \langle A_{12} |\hat{0}^+_{\alpha}|A_1 \rangle \langle B_{10} |\hat{1}^-_{\alpha}|B_1 \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle t_{A_{12},B_{10}} t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_{12},B_9}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_{12},B_9}t_{I_9,J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_{12},I_9}t_{B_9,J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I1^J\rangle\langle A_{12}|\hat{0}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{11}|\hat{1}_{\alpha}^+|J_0\rangle t_{A_{12},I_9}t_{B_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},I_7}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},I_7}t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{12}|\hat{0}^+_\alpha |A_1\rangle \langle B_9|\hat{0}^-_\alpha |B_1\rangle \langle I_7|\hat{0}^-_\beta |I_0\rangle \langle J_{13}|\hat{1}^+_\beta |J_0\rangle t_{A_{12},B_9} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{9},I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},B_{9}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},B_{9}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},B_7}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},I_8}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},I_8}t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_9,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{I} \langle 0^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{12},B_9} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{10},I_{9},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{9},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{9},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},I_{9}}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},I_{9}}t_{B_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{14},B_{8},I_{7},J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{14},B_{8}}t_{I_{7},J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{14},B_{8}}t_{I_{7},J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{8},J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{14}|\hat{0}_{\beta}^{+}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{14},I_{7}}t_{B_{8},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{10},I_7,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{12},B_{10}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{12},B_{10},I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},B_{10}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{12}|\hat{0}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{12},I_{10}}t_{B_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},B_8}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 1^J\rangle\langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{14},I_8}t_{B_8,J_{13}} \end{split}$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B | \hat{g} | 1^I 1^J \rangle \langle A_{14} | \hat{0}^+_{\beta} | A_1 \rangle \langle B_8 | \hat{1}^-_{\beta} | B_1 \rangle \langle I_8 | \hat{1}^+_{\beta} | I_0 \rangle \langle J_{13} | \hat{1}^+_{\beta} | J_0 \rangle t_{A_{14}, I_8} t_{B_8, J_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_{10},I_8,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^B 1^J \rangle \langle A_{12} |\hat{0}_{\alpha}^+ |A_1\rangle \langle B_{10} |\hat{1}_{\alpha}^- |B_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0\rangle t_{A_{12},B_{10}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_9,J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{11},B_9}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^I0^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{11},B_9}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{11},I_9}t_{B_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^I0^J\rangle\langle A_{11}|\hat{1}_{\alpha}^+|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_9|\hat{0}_{\alpha}^-|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_{11},I_9}t_{B_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_7,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^I0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^I0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_7,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_I \langle 1^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_{11}|\hat{1}^+_\alpha |A_1\rangle \langle B_9|\hat{0}^-_\alpha |B_1\rangle \langle I_7|\hat{0}^+_\beta |I_0\rangle \langle J_{14}|\hat{0}^+_\beta |J_0\rangle t_{A_{11},B_9} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{9},I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{9}}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{9}}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{9},J_{12}} \end{split}$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B | \hat{g} | 1^I 0^J \rangle \langle A_{11} | \hat{1}_{\alpha}^+ | A_1 \rangle \langle B_9 | \hat{0}_{\alpha}^- | B_1 \rangle \langle I_{10} | \hat{1}_{\alpha}^- | I_0 \rangle \langle J_{12} | \hat{0}_{\alpha}^+ | J_0 \rangle t_{A_{11}, I_{10}} t_{B_9, J_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_{11}|\hat{1}^+_\alpha |A_1\rangle \langle B_9|\hat{0}^-_\alpha |B_1\rangle \langle I_8|\hat{1}^-_\beta |I_0\rangle \langle J_{14}|\hat{0}^+_\beta |J_0\rangle t_{A_{11},B_9} t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{10},I_{9},J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{9},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{9},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_7,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_7|\hat{0}^-_{\beta} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle t_{A_{13},B_8} t_{I_7,J_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 0^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_7|\hat{0}^-_{\beta} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle t_{A_{13},B_8} t_{I_7,J_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_7|\hat{0}^-_{\beta} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle t_{A_{13},I_7} t_{B_8,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 0^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_7|\hat{0}^-_{\beta} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle t_{A_{13},I_7} t_{B_8,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_{10}, I_7, J_{14})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{I} | \hat{g} | 1^{B} 0^{J} \rangle \langle A_{11} | \hat{1}_{\alpha}^{+} | A_{1} \rangle \langle B_{10} | \hat{1}_{\alpha}^{-} | B_{1} \rangle \langle I_{7} | \hat{0}_{\beta}^{-} | I_{0} \rangle \langle J_{14} | \hat{0}_{\beta}^{+} | J_{0} \rangle t_{A_{11}, B_{10}} t_{I_{7}, J_{14}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{10},I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_8,J_{14})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^I0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^I0^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_8,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_{10}, I_8, J_{14})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|1^B 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_8|\hat{1}^-_{\beta} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle t_{A_{11}, B_{10}} t_{I_8, J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_9|\hat{0}^-_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_{11},B_9} t_{I_9,J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_9|\hat{0}^-_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_{11},B_9} t_{I_9,J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_9|\hat{0}^-_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_{11},I_9} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_9|\hat{0}^-_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_{11},I_9} t_{B_9,J_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_7, I_7, J_{13})\rangle =$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{13},B_{7}}t_{I_{7},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{13},B_{7}}t_{I_{7},J_{13}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{7},J_{13}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{13}|\hat{1}_{\beta}^{+}|A_{1}\rangle\langle B_{7}|\hat{0}_{\beta}^{-}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{13},I_{7}}t_{B_{7},J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{11},B_9} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{9},I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{9}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{9}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{9},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},B_7}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_9,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{11},B_9} t_{I_8,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_{10}, I_9, J_{11})\rangle =$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{9},J_{11}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{10},J_{11}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{9}}t_{B_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_7,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_7,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},I_7}t_{B_8,J_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_{10}, I_7, J_{13})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_{11}| \hat{1}_{\alpha}^+ |A_1\rangle \langle B_{10}| \hat{1}_{\alpha}^- |B_1\rangle \langle I_7| \hat{0}_{\beta}^- |I_0\rangle \langle J_{13}| \hat{1}_{\beta}^+ |J_0\rangle t_{A_{11}, B_{10}} t_{I_7, J_{13}}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{11},B_{10},I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},B_{10}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{11}|\hat{1}_{\alpha}^{+}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{11},I_{10}}t_{B_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_8,J_{13})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},B_8}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^I1^J\rangle\langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{13},I_8}t_{B_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_{10},I_8,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|1^B 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1 \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle t_{A_{11},B_{10}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_7,I_9,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_{12}|\hat{0}^+_\alpha |A_1\rangle \langle B_7|\hat{0}^-_\beta |B_1\rangle \langle I_9|\hat{0}^-_\alpha |I_0\rangle \langle J_{14}|\hat{0}^+_\beta |J_0\rangle t_{A_{12},I_9} t_{B_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_8,I_9,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{12},I_9} t_{B_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_7,I_{10},J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^I 0^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{12},I_{10}} t_{B_7,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{12}, B_8, I_{10}, J_{14})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|1^I 0^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{12}, I_{10}} t_{B_8, J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_7,I_9,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}^+_\alpha |A_1\rangle \langle B_7|\hat{0}^-_\beta |B_1\rangle \langle I_9|\hat{0}^-_\alpha |I_0\rangle \langle J_{13}|\hat{1}^+_\beta |J_0\rangle t_{A_{12},I_9} t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_8,I_9,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 1^B |\hat{g}|0^I 1^J \rangle \langle A_{12}|\hat{0}^+_\alpha |A_1\rangle \langle B_8|\hat{1}^-_\beta |B_1\rangle \langle I_9|\hat{0}^-_\alpha |I_0\rangle \langle J_{13}|\hat{1}^+_\beta |J_0\rangle t_{A_{12},I_9} t_{B_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_7,I_{10},J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^I 1^J \rangle \langle A_{12} |\hat{0}^+_{\alpha} |A_1\rangle \langle B_7 |\hat{0}^-_{\beta} |B_1\rangle \langle I_{10} |\hat{1}^-_{\alpha} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle t_{A_{12},I_{10}} t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{12},B_8,I_{10},J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 1^J \rangle \langle A_{12}|\hat{0}^+_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{12},I_{10}} t_{B_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_7,I_9,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{11},I_9} t_{B_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_8,I_9,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_{11}|\hat{1}^+_\alpha |A_1\rangle \langle B_8|\hat{1}^-_\beta |B_1\rangle \langle I_9|\hat{0}^-_\alpha |I_0\rangle \langle J_{14}|\hat{0}^+_\beta |J_0\rangle t_{A_{11},I_9} t_{B_8,J_{14}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{11}, B_7, I_{10}, J_{14})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^I 0^J \rangle \langle A_{11}|\hat{1}_{\alpha}^+ |A_1\rangle \langle B_7|\hat{0}_{\beta}^- |B_1\rangle \langle I_{10}|\hat{1}_{\alpha}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle t_{A_{11}, I_{10}} t_{B_7, J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_8,I_{10},J_{14})\rangle = \\ &+ \tfrac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^I 0^J \rangle \langle A_{11}|\hat{1}^+_\alpha |A_1\rangle \langle B_8|\hat{1}^-_\beta |B_1\rangle \langle I_{10}|\hat{1}^-_\alpha |I_0\rangle \langle J_{14}|\hat{0}^+_\beta |J_0\rangle t_{A_{11},I_{10}} t_{B_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_7,I_9,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{I} \langle 1^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{11},I_9} t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_8,I_9,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 1^B |\hat{g}| 0^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{11},I_9} t_{B_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_7,I_{10},J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{11},I_{10}} t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{11},B_8,I_{10},J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^I 1^J \rangle \langle A_{11}|\hat{1}^+_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{11},I_{10}} t_{B_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{12},I_9,J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{14},J_7} t_{B_{12},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{12},I_9,J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^J 0^I \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle B_{12} |\hat{0}^+_{\alpha} |B_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_8 |\hat{1}^-_{\beta} |J_0\rangle t_{A_{14},J_8} t_{B_{12},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{12},I_{10},J_7)\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_{14}|\hat{0}^+_\beta |A_1\rangle \langle B_{12}|\hat{0}^+_\alpha |B_1\rangle \langle I_{10}|\hat{1}^-_\alpha |I_0\rangle \langle J_7|\hat{0}^-_\beta |J_0\rangle t_{A_{14},J_7} t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{12},I_{10},J_8)\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}| 1^J 1^I \rangle \langle A_{14} |\hat{0}^+_\beta |A_1\rangle \langle B_{12} |\hat{0}^+_\alpha |B_1\rangle \langle I_{10} |\hat{1}^-_\alpha |I_0\rangle \langle J_8 |\hat{1}^-_\beta |J_0\rangle t_{A_{14},J_8} t_{B_{12},I_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_{12}, I_9, J_7)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{12}|\hat{0}^{+}_{\alpha}|B_{1}\rangle\langle I_{9}|\hat{0}^{-}_{\alpha}|I_{0}\rangle\langle J_{7}|\hat{0}^{-}_{\beta}|J_{0}\rangle t_{A_{13},J_{7}}t_{B_{12},I_{9}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{12},I_9,J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{13},J_8} t_{B_{12},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{12},I_{10},J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{13},J_7} t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{12},I_{10},J_8)\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}| 1^J 1^I \rangle \langle A_{13}|\hat{1}^+_\beta |A_1\rangle \langle B_{12}|\hat{0}^+_\alpha |B_1\rangle \langle I_{10}|\hat{1}^-_\alpha |I_0\rangle \langle J_8|\hat{1}^-_\beta |J_0\rangle t_{A_{13},J_8} t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{11},I_9,J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{14},J_7} t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{11},I_9,J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 0^I \rangle \langle A_{14} |\hat{0}^+_{\beta}|A_1 \rangle \langle B_{11} |\hat{1}^+_{\alpha}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8 |\hat{1}^-_{\beta}|J_0 \rangle t_{A_{14},J_8} t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{11},I_{10},J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{14},J_7} t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{11},I_{10},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 1^I \rangle \langle A_{14} |\hat{0}^+_{\beta}| A_1 \rangle \langle B_{11} |\hat{1}^+_{\alpha}| B_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha}| I_0 \rangle \langle J_8 |\hat{1}^-_{\beta}| J_0 \rangle t_{A_{14},J_8} t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{11},I_9,J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{13},J_7} t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{11},I_9,J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^J 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{13},J_8} t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{11},I_{10},J_7)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 0^J 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{13},J_7} t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{11},I_{10},J_8)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 1^J 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{13},J_8} t_{B_{11},I_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_{12}, I_7, J_9)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|0^I 0^J\rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{14}, I_7}t_{B_{12}, J_9}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{12},I_8,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^I 0^J \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle B_{12} |\hat{0}^+_{\alpha} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle t_{A_{14},I_8} t_{B_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{12},I_7,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_{14}|\hat{0}^+_\beta |A_1\rangle \langle B_{12}|\hat{0}^+_\alpha |B_1\rangle \langle I_7|\hat{0}^-_\beta |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle t_{A_{14},I_7} t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{12},I_8,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^I 1^J \rangle \langle A_{14} |\hat{0}^+_{\beta}| A_1 \rangle \langle B_{12} |\hat{0}^+_{\alpha}| B_1 \rangle \langle I_8 |\hat{1}^-_{\beta}| I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha}| J_0 \rangle t_{A_{14},I_8} t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{12},I_7,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{13},I_7} t_{B_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{12},I_8,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}| 1^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_{12}|\hat{0}^+_{\alpha} |B_1\rangle \langle I_8|\hat{1}^-_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle t_{A_{13},I_8} t_{B_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{12},I_7,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{13},I_7} t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{12},I_8,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}| 1^I 1^J \rangle \langle A_{13}|\hat{1}^+_\beta |A_1\rangle \langle B_{12}|\hat{0}^+_\alpha |B_1\rangle \langle I_8|\hat{1}^-_\beta |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle t_{A_{13},I_8} t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{11},I_7,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{14},I_7} t_{B_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{11},I_8,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{I} \langle 0^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_{14} |\hat{0}^+_{\beta}|A_1 \rangle \langle B_{11} |\hat{1}^+_{\alpha}|B_1 \rangle \langle I_8 |\hat{1}^-_{\beta}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{14},I_8} t_{B_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{11},I_7,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^I 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{14},I_7} t_{B_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{11},I_8,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 1^J \rangle \langle A_{14} |\hat{0}^+_{\beta}| A_1 \rangle \langle B_{11} |\hat{1}^+_{\alpha}| B_1 \rangle \langle I_8 |\hat{1}^-_{\beta}| I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha}| J_0 \rangle t_{A_{14},I_8} t_{B_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{11},I_7,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 0^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha} |B_1\rangle \langle I_7|\hat{0}^-_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle t_{A_{13},I_7} t_{B_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{11},I_8,J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{13},I_8} t_{B_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{11},I_7,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^I 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{13},I_7} t_{B_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{11},I_8,J_{10})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 1^B |\hat{g}| 1^I 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha} |B_1\rangle \langle I_8|\hat{1}^-_{\beta} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle t_{A_{13},I_8} t_{B_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_{12},J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,B_{12}}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,B_{12}}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_{12},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{12}|\hat{0}_\alpha^+|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_{14},J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_7|\hat{0}_{\beta}^{-}|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_7,B_{14}}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I0^J\rangle\langle A_7|\hat{0}_{\beta}^{-}|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_7,B_{14}}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B0^J\rangle\langle A_7|\hat{0}_{\beta}^{-}|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_7,I_{14}}t_{B_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I0^J\rangle\langle A_7|\hat{0}_{\beta}^{-}|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_0\rangle\langle J_7|\hat{0}_{\beta}^{-}|J_0\rangle t_{A_7,I_{14}}t_{B_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_{14},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{12} |\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle t_{A_9,B_{12}} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{12},I_{12},J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{12}}t_{B_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{12}}t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_{14},J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B1^J\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_8|\hat{1}_\beta^-|J_0\rangle t_{A_7,B_{14}}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I1^J\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_8|\hat{1}_\beta^-|J_0\rangle t_{A_7,B_{14}}t_{I_{14},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|0^B1^J\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_8|\hat{1}_\beta^-|J_0\rangle t_{A_7,I_{14}}t_{B_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I1^J\rangle\langle A_7|\hat{0}_\beta^-|A_1\rangle\langle B_{14}|\hat{0}_\beta^+|B_1\rangle\langle I_{14}|\hat{0}_\beta^+|I_0\rangle\langle J_8|\hat{1}_\beta^-|J_0\rangle t_{A_7,I_{14}}t_{B_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_{14},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{12} |\hat{0}_\alpha^+ |B_1\rangle \langle I_{14} |\hat{0}_\beta^+ |I_0\rangle \langle J_8 |\hat{1}_\beta^- |J_0\rangle t_{A_9,B_{12}} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{12},I_{12},J_{9})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{12},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{12},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{14},I_{14},J_{7})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},B_{14}}t_{I_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},B_{14}}t_{I_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{14},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{12},I_{14},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{10},B_{12}} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{12},I_{12},J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_{14},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta}|I_0 \rangle \langle J_8 |\hat{1}^-_{\beta}|J_0 \rangle t_{A_8,B_{14}} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},B_{14}}t_{I_{14},J_{8}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{14},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{12},I_{14},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{10},B_{12}} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{12},I_{11},J_{9})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{14},I_{13},J_{7})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{7},B_{14}}t_{I_{13},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{7},B_{14}}t_{I_{13},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{7},I_{13}}t_{B_{14},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{7},I_{13}}t_{B_{14},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_{13},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{12} |\hat{0}_\alpha^+ |B_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle J_7 |\hat{0}_\beta^- |J_0\rangle t_{A_9,B_{12}} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_{11},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{12} |\hat{0}_\alpha^+ |B_1\rangle \langle I_{11} |\hat{1}_\alpha^+ |I_0\rangle \langle J_{10} |\hat{1}_\alpha^- |J_0\rangle t_{A_9,B_{12}} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{11},J_{10}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{12},J_{10}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_{13},J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_7,B_{14}}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_7,B_{14}}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_7,I_{13}}t_{B_{14},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_7,I_{13}}t_{B_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_{13},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{12} |\hat{0}_\alpha^+ |B_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle J_8 |\hat{1}_\beta^- |J_0\rangle t_{A_9,B_{12}} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{12},I_{11},J_{9})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{12},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{12},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_{13},J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_8,B_{14}}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_8,B_{14}}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_{14},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_{14},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_{12}, I_{13}, J_7)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle t_{A_{10}, B_{12}} t_{I_{13}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{12},I_{11},J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},B_{12}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},B_{12}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},I_{11}}t_{B_{12},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle B_{12}|\hat{0}^+_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{10},I_{11}}t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{14},I_{13},J_{8})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},B_{14}}t_{I_{13},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},B_{14}}t_{I_{13},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{14},J_{8}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{14},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{12},I_{13},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{10},B_{12}} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_{12},J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,B_{11}}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^I0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,B_{11}}t_{I_{12},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^I0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_{12}|\hat{0}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,I_{12}}t_{B_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_{14},J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_7,B_{13}}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^I0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_7,B_{13}}t_{I_{14},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^I|\hat{g}|1^B0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_7,I_{14}}t_{B_{13},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A1^B|\hat{g}|0^I0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_7,I_{14}}t_{B_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_{14},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{11}|\hat{1}_\alpha^+ |B_1\rangle \langle I_{14}|\hat{0}_\beta^+ |I_0\rangle \langle J_7 |\hat{0}_\beta^- |J_0\rangle t_{A_9,B_{11}} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{11},I_{12},J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},B_{11}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},B_{11}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{12}}t_{B_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{12}}t_{B_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{13},I_{14},J_{8})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{7},B_{13}}t_{I_{14},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{7},B_{13}}t_{I_{14},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{7},I_{14}}t_{B_{13},J_{8}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{7},I_{14}}t_{B_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_{14},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{11}|\hat{1}_\alpha^+ |B_1\rangle \langle I_{14}|\hat{0}_\beta^+ |I_0\rangle \langle J_8|\hat{1}_\beta^- |J_0\rangle t_{A_9,B_{11}} t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{11},I_{12},J_{9})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{12},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{12},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{11},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{13},I_{14},J_{7})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},B_{13}}t_{I_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},B_{13}}t_{I_{14},J_{7}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{13},J_{7}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{7}|\hat{0}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{13},J_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{11},I_{14},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle t_{A_{10},B_{11}} t_{I_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{11},I_{12},J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{12},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{13},I_{14},J_{8})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},B_{13}}t_{I_{14},J_{8}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},B_{13}}t_{I_{14},J_{8}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{13},J_{8}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{8}|\hat{1}_{\beta}^{-}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{13},J_{8}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{11},I_{14},J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^B1^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{10},B_{11}}t_{I_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_{11},J_9)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,B_{11}}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,B_{11}}t_{I_{11},J_9} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,I_{11}}t_{B_{11},J_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 0^J\rangle\langle A_9|\hat{0}_\alpha^-|A_1\rangle\langle B_{11}|\hat{1}_\alpha^+|B_1\rangle\langle I_{11}|\hat{1}_\alpha^+|I_0\rangle\langle J_9|\hat{0}_\alpha^-|J_0\rangle t_{A_9,I_{11}}t_{B_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_{13},J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_7,B_{13}}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_7,B_{13}}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_7,I_{13}}t_{B_{13},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_7|\hat{0}_{\beta}^-|J_0\rangle t_{A_7,I_{13}}t_{B_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_{13},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 1^I |\hat{g}| 1^B 0^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{11}|\hat{1}_\alpha^+ |B_1\rangle \langle I_{13}|\hat{1}_\beta^+ |I_0\rangle \langle J_7 |\hat{0}_\beta^- |J_0\rangle t_{A_9,B_{11}} t_{I_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{11},I_{11},J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},B_{11}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},B_{11}}t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{11},J_{10}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_{13},J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_7,B_{13}}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_7,B_{13}}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_7,I_{13}}t_{B_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_8|\hat{1}_{\beta}^-|J_0\rangle t_{A_7,I_{13}}t_{B_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_{13},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 1^I |\hat{g}| 1^B 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{11}|\hat{1}_\alpha^+ |B_1\rangle \langle I_{13}|\hat{1}_\beta^+ |I_0\rangle \langle J_8|\hat{1}_\beta^- |J_0\rangle t_{A_9,B_{11}} t_{I_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{11},I_{11},J_{9})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{11},J_{9}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{11},J_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{9}|\hat{0}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{11},J_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_{13},J_7)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_8,B_{13}}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_8,B_{13}}t_{I_{13},J_7} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_{13},J_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_{13},J_7} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_{11}, I_{13}, J_7)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 1^B 0^J \rangle \langle A_{10}| \hat{1}^-_{\alpha} |A_1\rangle \langle B_{11}| \hat{1}^+_{\alpha} |B_1\rangle \langle I_{13}| \hat{1}^+_{\beta} |I_0\rangle \langle J_7| \hat{0}^-_{\beta} |J_0\rangle t_{A_{10}, B_{11}} t_{I_{13}, J_7}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{11},I_{11},J_{10})\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{11},J_{10}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{11},J_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{10}|\hat{1}_{\alpha}^{-}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_{13},J_8)\rangle = \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_8,B_{13}}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_8,B_{13}}t_{I_{13},J_8} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_{13},J_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_{13},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_{11}, I_{13}, J_8)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|1^B 1^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_{10}, B_{11}} t_{I_{13}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{12},I_{14},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_7,I_{14}} t_{B_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{12},I_{14},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_8,I_{14}} t_{B_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{12},I_{14},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_7 |\hat{0}^-_\beta |A_1\rangle \langle B_{12} |\hat{0}^+_\alpha |B_1\rangle \langle I_{14} |\hat{0}^+_\beta |I_0\rangle \langle J_{10} |\hat{1}^-_\alpha |J_0\rangle t_{A_7,I_{14}} t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{12},I_{14},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_8 |\hat{1}^-_\beta |A_1\rangle \langle B_{12} |\hat{0}^+_\alpha |B_1\rangle \langle I_{14} |\hat{0}^+_\beta |I_0\rangle \langle J_{10} |\hat{1}^-_\alpha |J_0\rangle t_{A_8,I_{14}} t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{12},I_{13},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}| 1^I 0^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{12} |\hat{0}^+_{\alpha} |B_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle t_{A_7,I_{13}} t_{B_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{12},I_{13},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}| 1^I 0^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{12} |\hat{0}^+_{\alpha} |B_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle t_{A_8,I_{13}} t_{B_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{12},I_{13},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^I 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{12} |\hat{0}^+_{\alpha} |B_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle t_{A_7,I_{13}} t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{12},I_{13},J_{10})\rangle = \\ &+ \tfrac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^I 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_8,I_{13}} t_{B_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{11},I_{14},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{I} \langle 0^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_7,I_{14}} t_{B_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{11},I_{14},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_8,I_{14}} t_{B_{11},J_9} \end{split}$$

$$\langle (A_1, B_1) | \hat{H} | (A_7, B_{11}, I_{14}, J_{10}) \rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B | \hat{g} | 0^I 1^J \rangle \langle A_7 | \hat{0}_{\beta}^- | A_1 \rangle \langle B_{11} | \hat{1}_{\alpha}^+ | B_1 \rangle \langle I_{14} | \hat{0}_{\beta}^+ | I_0 \rangle \langle J_{10} | \hat{1}_{\alpha}^- | J_0 \rangle t_{A_7, I_{14}} t_{B_{11}, J_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{11},I_{14},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 1^B |\hat{g}|0^I 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha} |B_1\rangle \langle I_{14}|\hat{0}^+_{\beta} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle t_{A_8,I_{14}} t_{B_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{11},I_{13},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha} |B_1\rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_9|\hat{0}^-_{\alpha} |J_0\rangle t_{A_7,I_{13}} t_{B_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{11},I_{13},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^I 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_8,I_{13}} t_{B_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{11},I_{13},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|1^I 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha} |B_1\rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle t_{A_7,I_{13}} t_{B_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{11},I_{13},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^I 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_8,I_{13}} t_{B_{11},J_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_{12}, I_9, J_{12})\rangle =$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{9},J_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{12},I_{9}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{12},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{14},I_{7},J_{14})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{7},B_{14}}t_{I_{7},J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{7},B_{14}}t_{I_{7},J_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{14}}t_{B_{14},I_{7}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{14}}t_{B_{14},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_7,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{12} |\hat{0}_{\alpha}^+ |B_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle t_{A_9,B_{12}} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{12},I_{10},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{12},I_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_8,J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 0^J\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_7,B_{14}}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|0^J 1^I\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_7,B_{14}}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 0^J\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_7,J_{14}}t_{B_{14},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|0^J 1^I\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_7,J_{14}}t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_8,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle t_{A_9,B_{12}} t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{12},I_{9},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{9},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{9},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{12},I_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{12},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_7,J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,B_{14}}t_{I_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,B_{14}}t_{I_7,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|0^B0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_{14},I_7} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_{14},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{12},I_7,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_{10}|\hat{1}_\alpha^- |A_1\rangle \langle B_{12}|\hat{0}_\alpha^+ |B_1\rangle \langle I_7|\hat{0}_\beta^- |I_0\rangle \langle J_{14}|\hat{0}_\beta^+ |J_0\rangle t_{A_{10},B_{12}} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{12},I_{10},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{12},I_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_8,J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,B_{14}}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,B_{14}}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_{14},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_{14},I_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_{12}, I_8, J_{14})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|0^B 0^J\rangle \langle A_{10}|\hat{1}_{\alpha}^-|A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+|B_1\rangle \langle I_8|\hat{1}_{\beta}^-|I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_{10}, B_{12}}t_{I_8, J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_9,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,B_{12}} t_{I_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,B_{12}} t_{I_9,J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,J_{11}} t_{B_{12},I_9} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_9|\hat{0}_{\alpha}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,J_{11}} t_{B_{12},I_9} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{14},I_{7},J_{13})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},B_{14}}t_{I_{7},J_{13}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},B_{14}}t_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{13}}t_{B_{14},I_{7}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{13}}t_{B_{14},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_7,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle t_{A_9,B_{12}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{12},I_{10},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},B_{12}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{12},I_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_8,J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^+|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,B_{14}}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^+|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,B_{14}}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|0^B 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^+|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_{14},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{14}|\hat{0}_{\beta}^+|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{12},I_8,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle t_{A_9,B_{12}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{12},I_{9},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{9},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{12},I_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{12},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_7,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta}|J_0 \rangle t_{A_8,B_{14}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{B} | \hat{g} | 1^{J} 0^{I} \rangle \langle A_{8} | \hat{1}^{-}_{\beta} | A_{1} \rangle \langle B_{14} | \hat{0}^{+}_{\beta} | B_{1} \rangle \langle I_{7} | \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle t_{A_{8},B_{14}} t_{I_{7},J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{I} | \hat{g} | 0^{B} 1^{J} \rangle \langle A_{8} | \hat{1}^{-}_{\beta} | A_{1} \rangle \langle B_{14} | \hat{0}^{+}_{\beta} | B_{1} \rangle \langle I_{7} | \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle t_{A_{8},J_{13}} t_{B_{14},I_{7}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{B} | \hat{g} | 1^{J} 0^{I} \rangle \langle A_{8} | \hat{1}^{-}_{\beta} | A_{1} \rangle \langle B_{14} | \hat{0}^{+}_{\beta} | B_{1} \rangle \langle I_{7} | \hat{0}^{-}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle t_{A_{8},J_{13}} t_{B_{14},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{12},I_7,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle t_{A_{10},B_{12}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{12},I_{10},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{12}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{12},I_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{12}|\hat{0}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_8,J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,B_{14}}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,B_{14}}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|0^B1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_{14},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{14}|\hat{0}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{12},I_8,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{12}|\hat{0}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle t_{A_{10},B_{12}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_9,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle \langle I_9|\hat{0}_{\alpha}^-|I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_9,B_{11}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{A} 1^{B} | \hat{g} | 0^{J} 0^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{11} | \hat{1}_{\alpha}^{+} | B_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle t_{A_{9},B_{11}} t_{I_{9},J_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{A} 0^{I} | \hat{g} | 1^{B} 0^{J} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{11} | \hat{1}_{\alpha}^{+} | B_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle t_{A_{9},J_{12}} t_{B_{11},I_{9}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{A} 1^{B} | \hat{g} | 0^{J} 0^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{11} | \hat{1}_{\alpha}^{+} | B_{1} \rangle \langle I_{9} | \hat{0}_{\alpha}^{-} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle t_{A_{9},J_{12}} t_{B_{11},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{13},I_{7},J_{14})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{7},B_{13}}t_{I_{7},J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{7},B_{13}}t_{I_{7},J_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{14}}t_{B_{13},I_{7}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{14}}t_{B_{13},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_7,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_9 |\hat{0}^-_{\alpha}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_7 |\hat{0}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle t_{A_9,B_{11}} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{11},I_{10},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},B_{11}}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},B_{11}}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{11},I_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_8,J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,B_{13}}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,B_{13}}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_{13},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_{13}|\hat{1}_{\beta}^+|B_1\rangle\langle I_8|\hat{1}_{\beta}^-|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_{13},I_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_{11}, I_8, J_{14})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle \langle A_9|\hat{0}_{\alpha}^-|A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+|B_1\rangle \langle I_8|\hat{1}_{\beta}^-|I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_9, B_{11}}t_{I_8, J_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{11},I_9,J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^B0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{10},B_{11}}t_{I_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^J0^I\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{10},B_{11}}t_{I_9,J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^B0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{10},J_{12}}t_{B_{11},I_9} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^J0^I\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle\langle I_9|\hat{0}^-_{\alpha}|I_0\rangle\langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{10},J_{12}}t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{13},I_{7},J_{14})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},B_{13}}t_{I_{7},J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},B_{13}}t_{I_{7},J_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{14}}t_{B_{13},I_{7}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{14}}t_{B_{13},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{11},I_7,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^B 0^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{14}|\hat{0}_{\beta}^+ |J_0\rangle t_{A_{10},B_{11}} t_{I_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{11},I_{10},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{10},J_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{11},I_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_8,J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,B_{13}}t_{I_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,B_{13}}t_{I_8,J_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_{13},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{11},I_8,J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|1^B 0^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle t_{A_{10},B_{11}} t_{I_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_9,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0 \rangle t_{A_9,B_{11}} t_{I_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0 \rangle t_{A_9,B_{11}} t_{I_9,J_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0 \rangle t_{A_9,J_{11}} t_{B_{11},I_9} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1 \rangle \langle I_9 |\hat{0}_{\alpha}^- |I_0 \rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0 \rangle t_{A_9,J_{11}} t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{7},B_{13},I_{7},J_{13})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},B_{13}}t_{I_{7},J_{13}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},B_{13}}t_{I_{7},J_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{13}}t_{B_{13},I_{7}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{13}}t_{B_{13},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_7,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{11}|\hat{1}_\alpha^+ |B_1\rangle \langle I_7 |\hat{0}_\beta^- |I_0\rangle \langle J_{13}|\hat{1}_\beta^+ |J_0\rangle t_{A_9,B_{11}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{11},I_{10},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},B_{11}}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},B_{11}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{11},I_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_8,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^B 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle t_{A_7,B_{13}} t_{I_8,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle t_{A_7,B_{13}} t_{I_8,J_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^B 1^J \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle t_{A_7,J_{13}} t_{B_{13},I_8} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 1^I \rangle \langle A_7 |\hat{0}_{\beta}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle t_{A_7,J_{13}} t_{B_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{11},I_8,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^B 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{11}|\hat{1}_{\alpha}^+ |B_1\rangle \langle I_8|\hat{1}_{\beta}^- |I_0\rangle \langle J_{13}|\hat{1}_{\beta}^+ |J_0\rangle t_{A_9,B_{11}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{11},I_{9},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{9},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{11},I_{9}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{9}|\hat{0}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{11},I_{9}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_7,J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^I|\hat{g}|1^B1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,B_{13}}t_{I_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_7|\hat{0}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,B_{13}}t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{13}}t_{B_{13},I_{7}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{13}|\hat{1}_{\beta}^{+}|B_{1}\rangle\langle I_{7}|\hat{0}_{\beta}^{-}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{13}}t_{B_{13},I_{7}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{11},I_7,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^I |\hat{g}|1^B 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle \langle I_7|\hat{0}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{10},B_{11}} t_{I_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{11},I_{10},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},B_{11}}t_{I_{10},J_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|1^{B}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{11},I_{10}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{11}|\hat{1}_{\alpha}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_8,J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,B_{13}}t_{I_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,B_{13}}t_{I_8,J_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^I|\hat{g}|1^B1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_{13},I_8} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle\langle I_8|\hat{1}^-_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{11},I_8,J_{13})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 1^I |\hat{g}|1^B 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1\rangle \langle I_8|\hat{1}^-_{\beta}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{10},B_{11}} t_{I_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{12},I_9,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle t_{A_7,J_{14}} t_{B_{12},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{12},I_9,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle t_{A_8,J_{14}} t_{B_{12},I_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_{12}, I_{10}, J_{14})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{12} |\hat{0}^+_{\alpha} |B_1\rangle \langle I_{10} |\hat{1}^-_{\alpha} |I_0\rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0\rangle t_{A_7, J_{14}} t_{B_{12}, I_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{12},I_{10},J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{12} |\hat{0}^+_{\alpha}|B_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle t_{A_8,J_{14}} t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{12},I_9,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^J 0^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{12} |\hat{0}^+_{\alpha} |B_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle t_{A_7,J_{13}} t_{B_{12},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{12},I_9,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle t_{A_8,J_{13}} t_{B_{12},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{12},I_{10},J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^J 1^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{12} |\hat{0}^+_{\alpha} |B_1\rangle \langle I_{10} |\hat{1}^-_{\alpha} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle t_{A_7,J_{13}} t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{12},I_{10},J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{I} \langle 1^A 0^B |\hat{g}|1^J 1^I \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{12}|\hat{0}^+_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle t_{A_8,J_{13}} t_{B_{12},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{11},I_9,J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle t_{A_7,J_{14}} t_{B_{11},I_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_{11}, I_9, J_{14})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha} |B_1\rangle \langle I_9|\hat{0}^-_{\alpha} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle t_{A_8, J_{14}} t_{B_{11}, I_9}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_{11}, I_{10}, J_{14})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha} |B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle t_{A_7, J_{14}} t_{B_{11}, I_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{11},I_{10},J_{14})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle t_{A_8,J_{14}} t_{B_{11},I_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{11},I_9,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 0^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha} |B_1\rangle \langle I_9|\hat{0}^-_{\alpha} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle t_{A_7,J_{13}} t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{11},I_9,J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^J 0^I \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{11}|\hat{1}^+_{\alpha}|B_1 \rangle \langle I_9|\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle t_{A_8,J_{13}} t_{B_{11},I_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{11},I_{10},J_{13})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|1^J 1^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{11}|\hat{1}^+_{\alpha} |B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle t_{A_7,J_{13}} t_{B_{11},I_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_{11}, I_{10}, J_{13})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 1^{B} | \hat{g} | 1^{J} 1^{I} \rangle \langle A_{8} | \hat{1}^{-}_{\beta} | A_{1} \rangle \langle B_{11} | \hat{1}^{+}_{\alpha} | B_{1} \rangle \langle I_{10} | \hat{1}^{-}_{\alpha} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle t_{A_{8},J_{13}} t_{B_{11},I_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_9,I_{12},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{14},J_7} t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_9,I_{12},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8} t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{10},I_{12},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{14},J_7} t_{B_{10},I_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_{10}, I_{12}, J_8)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|1^J 0^I \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha} |I_0\rangle \langle J_8|\hat{1}^-_{\beta} |J_0\rangle t_{A_{14}, J_8} t_{B_{10}, I_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_9,I_{12},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7} t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_9,I_{12},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_{13}|\hat{1}^+_\beta |A_1\rangle \langle B_9|\hat{0}^-_\alpha |B_1\rangle \langle I_{12}|\hat{0}^+_\alpha |I_0\rangle \langle J_8|\hat{1}^-_\beta |J_0\rangle t_{A_{13},J_8} t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{10},I_{12},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{13},J_7} t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{10},I_{12},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^J 0^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{13},J_8} t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_9,I_{11},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle B_9|\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{14},J_7} t_{B_9,I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_9,I_{11},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 1^I \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_8|\hat{1}^-_{\beta}|J_0\rangle t_{A_{14},J_8} t_{B_9,I_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_{10}, I_{11}, J_7)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{14}, J_7} t_{B_{10}, I_{11}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_{10}, I_{11}, J_8)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|1^J 1^I \rangle \langle A_{14}|\hat{0}^+_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_8|\hat{1}^-_{\beta} |J_0\rangle t_{A_{14}, J_8} t_{B_{10}, I_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_9,I_{11},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_7|\hat{0}^-_{\beta}|J_0\rangle t_{A_{13},J_7} t_{B_9,I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_9,I_{11},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|1^J 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_9|\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{13},J_8} t_{B_9,I_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_{10}, I_{11}, J_7)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_7|\hat{0}^-_{\beta} |J_0\rangle t_{A_{13}, J_7} t_{B_{10}, I_{11}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_{10}, I_{11}, J_8)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^J 1^I \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_8|\hat{1}^-_{\beta} |J_0\rangle t_{A_{13}, J_8} t_{B_{10}, I_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_{12},J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle B_7|\hat{0}^-_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{14},B_7} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_{12},J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{14},B_8} t_{I_{12},J_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_7, I_{12}, J_{10})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^I|\hat{g}|0^B 1^J\rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{14}, B_7}t_{I_{12}, J_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_{12},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_{14} |\hat{0}^+_{\beta}| A_1 \rangle \langle B_8 |\hat{1}^-_{\beta}| B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}| I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha}| J_0 \rangle t_{A_{14},B_8} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_{12},J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{I} \langle 1^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{13},B_7} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_{12},J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{13},B_8} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_{12},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{13}|\hat{1}^+_\beta |A_1\rangle \langle B_7|\hat{0}^-_\beta |B_1\rangle \langle I_{12}|\hat{0}^+_\alpha |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle t_{A_{13},B_7} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_{12},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|1^B 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{13},B_8} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_{11},J_9)\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_{14}|\hat{0}^+_\beta |A_1\rangle \langle B_7|\hat{0}^-_\beta |B_1\rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_9|\hat{0}^-_\alpha |J_0\rangle t_{A_{14},B_7} t_{I_{11},J_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{14}, B_8, I_{11}, J_9)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_9|\hat{0}^-_{\alpha}|J_0\rangle t_{A_{14}, B_8}t_{I_{11}, J_9}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_{11},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_{14}|\hat{0}^+_\beta |A_1\rangle \langle B_7|\hat{0}^-_\beta |B_1\rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{10}|\hat{1}^-_\alpha |J_0\rangle t_{A_{14},B_7} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_{11},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^B 1^J \rangle \langle A_{14} |\hat{0}^+_{\beta}|A_1 \rangle \langle B_8 |\hat{1}^-_{\beta}|B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha}|J_0 \rangle t_{A_{14},B_8} t_{I_{11},J_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_7, I_{11}, J_9)\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{13}|\hat{1}^{+}_{\beta}|A_{1}\rangle\langle B_{7}|\hat{0}^{-}_{\beta}|B_{1}\rangle\langle I_{11}|\hat{1}^{+}_{\alpha}|I_{0}\rangle\langle J_{9}|\hat{0}^{-}_{\alpha}|J_{0}\rangle t_{A_{13},B_{7}}t_{I_{11},J_{9}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_{11},J_9)\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|1^B 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_{13},B_8} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_{11},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0\rangle t_{A_{13},B_7} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_{11},J_{10})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 1^I |\hat{g}| 1^B 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_{10}|\hat{1}^-_{\alpha} |J_0\rangle t_{A_{13},B_8} t_{I_{11},J_{10}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_{14}, I_{12}, J_7)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle t_{A_9, I_{12}} t_{B_{14}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{14},I_{12},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle t_{A_9,I_{12}} t_{B_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{14},I_{12},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_7|\hat{0}^-_{\beta}|J_0 \rangle t_{A_{10},I_{12}} t_{B_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{14},I_{12},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_8|\hat{1}^-_{\beta}|J_0 \rangle t_{A_{10},I_{12}} t_{B_{14},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{13},I_{12},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle t_{A_9,I_{12}} t_{B_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{13},I_{12},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 1^B |\hat{g}|0^I 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{13} |\hat{1}_\beta^+ |B_1\rangle \langle I_{12} |\hat{0}_\alpha^+ |I_0\rangle \langle J_8 |\hat{1}_\beta^- |J_0\rangle t_{A_9,I_{12}} t_{B_{13},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_{13}, I_{12}, J_7)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_{10}|\hat{1}^-_{\alpha} |A_1\rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha} |I_0\rangle \langle J_7|\hat{0}^-_{\beta} |J_0\rangle t_{A_{10}, I_{12}} t_{B_{13}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{13},I_{12},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^I 1^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_{12}|\hat{0}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_{10},I_{12}} t_{B_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{14},I_{11},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle B_{14} |\hat{0}_{\beta}^+|B_1\rangle \langle I_{11} |\hat{1}_{\alpha}^+|I_0\rangle \langle J_7 |\hat{0}_{\beta}^-|J_0\rangle t_{A_9,I_{11}} t_{B_{14},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{14},I_{11},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1\rangle \langle I_{11} |\hat{1}_{\alpha}^+ |I_0\rangle \langle J_8 |\hat{1}_{\beta}^- |J_0\rangle t_{A_9,I_{11}} t_{B_{14},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_{14}, I_{11}, J_7)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^I 0^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle t_{A_{10}, I_{11}} t_{B_{14}, J_7}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_{14}, I_{11}, J_8)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^I 1^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_{10}, I_{11}} t_{B_{14}, J_8}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{13},I_{11},J_7)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{13} |\hat{1}_{\beta}^+ |B_1\rangle \langle I_{11} |\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7 |\hat{0}_{\beta}^- |J_0\rangle t_{A_9,I_{11}} t_{B_{13},J_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{13},I_{11},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 1^B |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{13}|\hat{1}_\beta^+ |B_1\rangle \langle I_{11}|\hat{1}_\alpha^+ |I_0\rangle \langle J_8|\hat{1}_\beta^- |J_0\rangle t_{A_9,I_{11}} t_{B_{13},J_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_{13}, I_{11}, J_7)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^I 0^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_7|\hat{0}_{\beta}^- |J_0\rangle t_{A_{10}, I_{11}} t_{B_{13}, J_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{13},I_{11},J_8)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^I 1^J \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_{11}|\hat{1}_{\alpha}^+ |I_0\rangle \langle J_8|\hat{1}_{\beta}^- |J_0\rangle t_{A_{10},I_{11}} t_{B_{13},J_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_{12},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle t_{A_7,B_{14}} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_{12},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{I} \langle 1^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle t_{A_8,B_{14}} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_{12},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha}|J_0 \rangle t_{A_7,B_{14}} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_{12},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha}|J_0 \rangle t_{A_8,B_{14}} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_{12},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{13} |\hat{1}^+_{\beta} |B_1\rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle t_{A_7,B_{13}} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_{12},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_9|\hat{0}^-_{\alpha}|J_0 \rangle t_{A_8,B_{13}} t_{I_{12},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_{12},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{13} |\hat{1}^+_{\beta} |B_1\rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle t_{A_7,B_{13}} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_{12},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{13} |\hat{1}^+_{\beta} |B_1\rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle t_{A_8,B_{13}} t_{I_{12},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_{11},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle t_{A_7,B_{14}} t_{I_{11},J_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_{14}, I_{11}, J_9)\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 1^{I} | \hat{g} | 0^{B} 0^{J} \rangle \langle A_{8} | \hat{1}^{-}_{\beta} | A_{1} \rangle \langle B_{14} | \hat{0}^{+}_{\beta} | B_{1} \rangle \langle I_{11} | \hat{1}^{+}_{\alpha} | I_{0} \rangle \langle J_{9} | \hat{0}^{-}_{\alpha} | J_{0} \rangle t_{A_{8},B_{14}} t_{I_{11},J_{9}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_{11},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha}|J_0 \rangle t_{A_7,B_{14}} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_{11},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{10} |\hat{1}^-_{\alpha}|J_0 \rangle t_{A_8,B_{14}} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_{11},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^B 0^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{13} |\hat{1}^+_{\beta} |B_1\rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0\rangle \langle J_9 |\hat{0}^-_{\alpha} |J_0\rangle t_{A_7,B_{13}} t_{I_{11},J_9} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_{11},J_9)\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 1^I |\hat{g}| 1^B 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{13} |\hat{1}^+_{\beta}|B_1 \rangle \langle I_{11} |\hat{1}^+_{\alpha}|I_0 \rangle \langle J_9 |\hat{0}^-_{\alpha}|J_0 \rangle t_{A_8,B_{13}} t_{I_{11},J_9} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_{13}, I_{11}, J_{10})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^B 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{13} |\hat{1}^+_{\beta} |B_1\rangle \langle I_{11} |\hat{1}^+_{\alpha} |I_0\rangle \langle J_{10} |\hat{1}^-_{\alpha} |J_0\rangle t_{A_7, B_{13}} t_{I_{11}, J_{10}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_{11},J_{10})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 1^A 1^I |\hat{g}|1^B 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{10}|\hat{1}^-_{\alpha}|J_0 \rangle t_{A_8,B_{13}} t_{I_{11},J_{10}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_9,I_{12},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{12} |\hat{0}_{\alpha}^+ |J_0\rangle t_{A_9,I_{12}} t_{B_9,J_{12}} \end{split}$$

$$\begin{split} &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{12}}t_{B_{9},J_{12}}\\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{9},I_{12}}\\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{9},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_7,I_{14},J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,I_{14}}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^J0^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,I_{14}}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^I0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_7,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^J0^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_7,I_{12},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle t_{A_9,I_{12}} t_{B_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{10},I_{12},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{12}}t_{B_{10},J_{12}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{12}}t_{B_{10},J_{12}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{10},I_{12}}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_8,I_{14},J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,I_{14}}t_{B_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^J 0^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,I_{14}}t_{B_8,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^I 0^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_8,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^J 0^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{14}|\hat{0}_{\beta}^+|J_0\rangle t_{A_7,J_{14}}t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_8,I_{12},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_8 |\hat{1}_{\beta}^- |B_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle t_{A_9,I_{12}} t_{B_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{9},I_{12},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{9},J_{12}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{9},J_{12}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{9},I_{12}}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{9},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_7,I_{14},J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,I_{14}}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,I_{14}}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_7,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_7,I_{12},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{10},I_{12}} t_{B_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{10},I_{12},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{10},J_{12}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{10},J_{12}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{10},I_{12}}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{8},I_{14},J_{14})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{8},J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},I_{14}}t_{B_{8},J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{14}}t_{B_{8},I_{14}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}0^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{14}|\hat{0}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{14}}t_{B_{8},I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_8,I_{12},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle t_{A_{10},I_{12}} t_{B_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_9,I_{12},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0 \rangle t_{A_9,I_{12}} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0 \rangle t_{A_9,I_{12}} t_{B_9,J_{11}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0 \rangle t_{A_9,J_{11}} t_{B_9,I_{12}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1 \rangle \langle B_9 |\hat{0}_{\alpha}^- |B_1 \rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0 \rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0 \rangle t_{A_9,J_{11}} t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_7,I_{14},J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|0^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,I_{14}}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^J 0^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,I_{14}}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|0^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_7,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^J 0^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_7|\hat{0}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_7,I_{12},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{I} \langle 0^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_{12} |\hat{0}_{\alpha}^+ |I_0\rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0\rangle t_{A_9,I_{12}} t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{10},I_{12},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{12}}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{12}}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{10},I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_8,I_{14},J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,I_{14}}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^J 0^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,I_{14}}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_8,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^J 0^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_8,I_{12},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^I 1^J \rangle \langle A_9 |\hat{0}^-_{\alpha}|A_1 \rangle \langle B_8 |\hat{1}^-_{\beta}|B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{13} |\hat{1}^+_{\beta}|J_0 \rangle t_{A_9,I_{12}} t_{B_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{9},I_{12},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{9},I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{9},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_7,I_{14},J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,I_{14}}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,I_{14}}t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{B} | \hat{g} | 0^{I} 1^{J} \rangle \langle A_{8} | \hat{1}^{-}_{\beta} | A_{1} \rangle \langle B_{7} | \hat{0}^{-}_{\beta} | B_{1} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle t_{A_{8},J_{13}} t_{B_{7},I_{14}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{B} | \hat{g} | 1^{J} 0^{I} \rangle \langle A_{8} | \hat{1}^{-}_{\beta} | A_{1} \rangle \langle B_{7} | \hat{0}^{-}_{\beta} | B_{1} \rangle \langle I_{14} | \hat{0}^{+}_{\beta} | I_{0} \rangle \langle J_{13} | \hat{1}^{+}_{\beta} | J_{0} \rangle t_{A_{8},J_{13}} t_{B_{7},I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_7,I_{12},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{10},I_{12}} t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{10},I_{12},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{12}}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{10},I_{12}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}0^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{12}|\hat{0}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_8,I_{14},J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,I_{14}}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,I_{14}}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|0^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_8,I_{14}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A1^B|\hat{g}|1^J0^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_8|\hat{1}^-_{\beta}|B_1\rangle\langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_8,I_{12},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 1^B |\hat{g}| 0^I 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle \langle B_8|\hat{1}^-_{\beta}|B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha}|I_0\rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_{10},I_{12}} t_{B_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_9,I_{11},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|1^I0^J\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_9,I_{11}}t_{B_9,J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^J1^I\rangle\langle A_9|\hat{0}_{\alpha}^-|A_1\rangle\langle B_9|\hat{0}_{\alpha}^-|B_1\rangle\langle I_{11}|\hat{1}_{\alpha}^+|I_0\rangle\langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_9,I_{11}}t_{B_9,J_{12}} \end{split}$$

$$\begin{split} &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^{A} 0^{B} | \hat{g} | 1^{I} 0^{J} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{9} | \hat{0}_{\alpha}^{-} | B_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle t_{A_{9},J_{12}} t_{B_{9},I_{11}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^{A} 0^{B} | \hat{g} | 0^{J} 1^{I} \rangle \langle A_{9} | \hat{0}_{\alpha}^{-} | A_{1} \rangle \langle B_{9} | \hat{0}_{\alpha}^{-} | B_{1} \rangle \langle I_{11} | \hat{1}_{\alpha}^{+} | I_{0} \rangle \langle J_{12} | \hat{0}_{\alpha}^{+} | J_{0} \rangle t_{A_{9},J_{12}} t_{B_{9},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_7,I_{13},J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|1^I0^J\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_7,I_{13}}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^J1^I\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_7,I_{13}}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|1^I0^J\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_7,J_{14}}t_{B_7,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A0^B|\hat{g}|0^J1^I\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_7,J_{14}}t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_7,I_{11},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^I 0^J \rangle \langle A_9 |\hat{0}^-_{\alpha}|A_1 \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle t_{A_9,I_{11}} t_{B_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{10},I_{11},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{10},I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{12}}t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_8,I_{13},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1 \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0 \rangle t_{A_7,I_{13}} t_{B_8,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 0^J 1^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1 \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0 \rangle t_{A_7,I_{13}} t_{B_8,J_{14}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1 \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0 \rangle t_{A_7,J_{14}} t_{B_8,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 0^J 1^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1 \rangle \langle B_8 |\hat{1}^-_{\beta} |B_1 \rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta} |J_0 \rangle t_{A_7,J_{14}} t_{B_8,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_8,I_{11},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_8 |\hat{1}_{\beta}^- |B_1\rangle \langle I_{11} |\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{14} |\hat{0}_{\beta}^+ |J_0\rangle t_{A_9,I_{11}} t_{B_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{9},I_{11},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{9},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{9},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{9},I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{9},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_7,I_{13},J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_7,J_{14}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I0^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_7,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|0^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_8,J_{14}}t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_7,I_{11},J_{14})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I0^J\rangle\langle A_{10}|\hat{1}^-_{\alpha}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_{10},I_{11}}t_{B_7,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{10},I_{11},J_{12})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{10},J_{12}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{10},I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{12}}t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{8},I_{13},J_{14})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{8},J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{8},J_{14}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}0^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{14}}t_{B_{8},I_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{14}}t_{B_{8},I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_8,I_{11},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{14}|\hat{0}^+_{\beta}|J_0 \rangle t_{A_{10},I_{11}} t_{B_8,J_{14}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{9},I_{11},J_{11})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{9},J_{11}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{9},J_{11}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{9},I_{11}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{9},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_7,I_{13},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^I 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_7 |\hat{0}^-_{\beta} |B_1\rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle t_{A_7,I_{13}} t_{B_7,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^J 1^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_7 |\hat{0}^-_{\beta} |B_1\rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle t_{A_7,I_{13}} t_{B_7,J_{13}} \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^I 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_7 |\hat{0}^-_{\beta} |B_1\rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle t_{A_7,J_{13}} t_{B_7,I_{13}} \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^J 1^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_7 |\hat{0}^-_{\beta} |B_1\rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle t_{A_7,J_{13}} t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_7,I_{11},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{I} \langle 0^A 0^B |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}^-_{\alpha}|A_1 \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle t_{A_9,I_{11}} t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{9},B_{10},I_{11},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},I_{11}}t_{B_{10},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{10},I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{9}|\hat{0}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{9},J_{11}}t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_8,I_{13},J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,I_{13}}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,I_{13}}t_{B_8,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^I 1^J\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_8,I_{13}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}_{\beta}^-|A_1\rangle\langle B_8|\hat{1}_{\beta}^-|B_1\rangle\langle I_{13}|\hat{1}_{\beta}^+|I_0\rangle\langle J_{13}|\hat{1}_{\beta}^+|J_0\rangle t_{A_7,J_{13}}t_{B_8,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_8,I_{11},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 1^J \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_8 |\hat{1}_{\beta}^- |B_1\rangle \langle I_{11} |\hat{1}_{\alpha}^+ |I_0\rangle \langle J_{13} |\hat{1}_{\beta}^+ |J_0\rangle t_{A_9,I_{11}} t_{B_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{9},I_{11},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{9},J_{11}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{9},I_{11}} \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}0^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{9},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_7,I_{13},J_{13})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^J1^I\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,I_{13}}t_{B_7,J_{13}} \\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^A0^B|\hat{g}|1^I1^J\rangle\langle A_8|\hat{1}^-_{\beta}|A_1\rangle\langle B_7|\hat{0}^-_{\beta}|B_1\rangle\langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_8,J_{13}}t_{B_7,I_{13}} \end{split}$$

$$+ \tfrac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B | \hat{g} | 1^J 1^I \rangle \langle A_8 | \hat{1}^-_{\beta} | A_1 \rangle \langle B_7 | \hat{0}^-_{\beta} | B_1 \rangle \langle I_{13} | \hat{1}^+_{\beta} | I_0 \rangle \langle J_{13} | \hat{1}^+_{\beta} | J_0 \rangle t_{A_8,J_{13}} t_{B_7,I_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_7,I_{11},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}| 1^I 1^J \rangle \langle A_{10}|\hat{1}^-_\alpha |A_1\rangle \langle B_7|\hat{0}^-_\beta |B_1\rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{13}|\hat{1}^+_\beta |J_0\rangle t_{A_{10},I_{11}} t_{B_7,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{10},B_{10},I_{11},J_{11})\rangle = \\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{10},J_{11}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},I_{11}}t_{B_{10},J_{11}}\\ &+ \frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{10},I_{11}}\\ &+ \frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{J}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{10}|\hat{1}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_{1},B_{1})|\hat{H}|(A_{8},B_{8},I_{13},J_{13})\rangle = \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{8},J_{13}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},I_{13}}t_{B_{8},J_{13}} \\ &+\frac{-1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{I}1^{J}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{13}}t_{B_{8},I_{13}} \\ &+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{8}|\hat{1}_{\beta}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{13}|\hat{1}_{\beta}^{+}|J_{0}\rangle t_{A_{8},J_{13}}t_{B_{8},I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_8,I_{11},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 1^I 1^J \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{11}|\hat{1}^+_{\alpha}|I_0 \rangle \langle J_{13}|\hat{1}^+_{\beta}|J_0 \rangle t_{A_{10},I_{11}} t_{B_8,J_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_9,I_{12},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{I} \langle 0^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_9 |\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{12} |\hat{0}^+_{\alpha}|I_0 \rangle \langle J_{14} |\hat{0}^+_{\beta}|J_0 \rangle t_{A_7,J_{14}} t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_9,I_{12},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_8 |\hat{1}^-_\beta |A_1\rangle \langle B_9 |\hat{0}^-_\alpha |B_1\rangle \langle I_{12} |\hat{0}^+_\alpha |I_0\rangle \langle J_{14} |\hat{0}^+_\beta |J_0\rangle t_{A_8,J_{14}} t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{10},I_{12},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle t_{A_7,J_{14}} t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{10},I_{12},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle t_{A_8,J_{14}} t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_9,I_{12},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^J 0^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_9 |\hat{0}^-_{\alpha} |B_1\rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle t_{A_7,J_{13}} t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_9,I_{12},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_9 |\hat{0}^-_{\alpha} |B_1\rangle \langle I_{12} |\hat{0}^+_{\alpha} |I_0\rangle \langle J_{13} |\hat{1}^+_{\beta} |J_0\rangle t_{A_8,J_{13}} t_{B_9,I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{10},I_{12},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 0^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle t_{A_7,J_{13}} t_{B_{10},I_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{10},I_{12},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 1^B |\hat{g}| 1^J 0^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{12}|\hat{0}^+_{\alpha} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle t_{A_8,J_{13}} t_{B_{10},I_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_9, I_{11}, J_{14})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}0^{B}|\hat{g}|0^{J}1^{I}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{9}|\hat{0}_{\alpha}^{-}|B_{1}\rangle\langle I_{11}|\hat{1}_{\alpha}^{+}|I_{0}\rangle\langle J_{14}|\hat{0}_{\beta}^{+}|J_{0}\rangle t_{A_{7},J_{14}}t_{B_{9},I_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_9,I_{11},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_8 |\hat{1}^-_\beta |A_1\rangle \langle B_9 |\hat{0}^-_\alpha |B_1\rangle \langle I_{11}|\hat{1}^+_\alpha |I_0\rangle \langle J_{14}|\hat{0}^+_\beta |J_0\rangle t_{A_8,J_{14}} t_{B_9,I_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_{10}, I_{11}, J_{14})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B|\hat{g}|0^J 1^I\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{14}|\hat{0}^+_{\beta}|J_0\rangle t_{A_7, J_{14}}t_{B_{10}, I_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{10},I_{11},J_{14})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_{14}|\hat{0}^+_{\beta} |J_0\rangle t_{A_8,J_{14}} t_{B_{10},I_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_9, I_{11}, J_{13})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^J 1^I\rangle\langle A_7|\hat{0}^-_{\beta}|A_1\rangle\langle B_9|\hat{0}^-_{\alpha}|B_1\rangle\langle I_{11}|\hat{1}^+_{\alpha}|I_0\rangle\langle J_{13}|\hat{1}^+_{\beta}|J_0\rangle t_{A_7, J_{13}}t_{B_9, I_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_9,I_{11},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}|1^J 1^I \rangle \langle A_8 |\hat{1}^-_\beta |A_1\rangle \langle B_9 |\hat{0}^-_\alpha |B_1\rangle \langle I_{11} |\hat{1}^+_\alpha |I_0\rangle \langle J_{13} |\hat{1}^+_\beta |J_0\rangle t_{A_8,J_{13}} t_{B_9,I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{10},I_{11},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 1^I \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle t_{A_7,J_{13}} t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{10},I_{11},J_{13})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 1^J 1^I \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{11}|\hat{1}^+_{\alpha} |I_0\rangle \langle J_{13}|\hat{1}^+_{\beta} |J_0\rangle t_{A_8,J_{13}} t_{B_{10},I_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_9,I_7,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_{14}|\hat{0}^+_\beta |A_1\rangle \langle B_9|\hat{0}^-_\alpha |B_1\rangle \langle I_7|\hat{0}^-_\beta |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle t_{A_{14},I_7} t_{B_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_9,I_8,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}| 1^I 0^J \rangle \langle A_{14} |\hat{0}^+_\beta |A_1\rangle \langle B_9 |\hat{0}^-_\alpha |B_1\rangle \langle I_8 |\hat{1}^-_\beta |I_0\rangle \langle J_{12} |\hat{0}^+_\alpha |J_0\rangle t_{A_{14},I_8} t_{B_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{10},I_7,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_{14},I_7} t_{B_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_{10},I_8,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_{14} |\hat{0}^+_{\beta} |A_1\rangle \langle B_{10} |\hat{1}^-_{\alpha} |B_1\rangle \langle I_8 |\hat{1}^-_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle t_{A_{14},I_8} t_{B_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_9,I_7,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_7|\hat{0}^+_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{13},I_7} t_{B_9,J_{12}} \end{split}$$

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$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{10},I_7,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_{13},I_7} t_{B_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_{10},I_8,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^I 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_{13},I_8} t_{B_{10},J_{12}} \end{split}$$

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$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_9,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{14},B_7} t_{I_9,J_{12}} \end{split}$$

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$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_9,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_{13},B_7} t_{I_9,J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{13}, B_8, I_9, J_{12})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^{A} 0^{I} | \hat{g} | 1^{B} 0^{J} \rangle \langle A_{13} | \hat{1}^{+}_{\beta} | A_{1} \rangle \langle B_{8} | \hat{1}^{-}_{\beta} | B_{1} \rangle \langle I_{9} | \hat{0}^{-}_{\alpha} | I_{0} \rangle \langle J_{12} | \hat{0}^{+}_{\alpha} | J_{0} \rangle t_{A_{13}, B_{8}} t_{I_{9}, J_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_7|\hat{0}^-_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_{13},B_7} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_{10},J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}| 1^B 0^J \rangle \langle A_{13}| \hat{1}^+_{\beta} |A_1\rangle \langle B_8| \hat{1}^-_{\beta} |B_1\rangle \langle I_{10}| \hat{1}^-_{\alpha} |I_0\rangle \langle J_{12}| \hat{0}^+_{\alpha} |J_0\rangle t_{A_{13},B_8} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_{14},B_7} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_{14}| \hat{0}^+_\beta |A_1\rangle \langle B_8| \hat{1}^-_\beta |B_1\rangle \langle I_9| \hat{0}^-_\alpha |I_0\rangle \langle J_{11}| \hat{1}^+_\alpha |J_0\rangle t_{A_{14},B_8} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_7,I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_{14}|\hat{0}^+_{\beta}|A_1 \rangle \langle B_7|\hat{0}^-_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_{14},B_7} t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{14},B_8,I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}| 1^B 1^J \rangle \langle A_{14}| \hat{0}^+_{\beta} |A_1\rangle \langle B_8| \hat{1}^-_{\beta} |B_1\rangle \langle I_{10}| \hat{1}^-_{\alpha} |I_0\rangle \langle J_{11}| \hat{1}^+_{\alpha} |J_0\rangle t_{A_{14},B_8} t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1\rangle \langle B_7|\hat{0}^-_{\beta}|B_1\rangle \langle I_9|\hat{0}^-_{\alpha}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_{13},B_7} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_9,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_9|\hat{0}^-_{\alpha} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle t_{A_{13},B_8} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_7,I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta}|A_1 \rangle \langle B_7|\hat{0}^-_{\beta}|B_1 \rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_{13},B_7} t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{13},B_8,I_{10},J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|1^B 1^J \rangle \langle A_{13}|\hat{1}^+_{\beta} |A_1\rangle \langle B_8|\hat{1}^-_{\beta} |B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle t_{A_{13},B_8} t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{14},I_7,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1 \rangle \langle B_{14}|\hat{0}_{\beta}^+|B_1 \rangle \langle I_7 |\hat{0}_{\beta}^-|I_0 \rangle \langle J_{12}|\hat{0}_{\alpha}^+|J_0 \rangle t_{A_9,J_{12}} t_{B_{14},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{14},I_8,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^-|A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+|B_1\rangle \langle I_8|\hat{1}_{\beta}^-|I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_9,J_{12}} t_{B_{14},I_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_{14}, I_7, J_{12})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_{14}|\hat{0}_{\beta}^+ |B_1\rangle \langle I_7|\hat{0}_{\beta}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle t_{A_{10}, J_{12}} t_{B_{14}, I_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{14},I_8,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_{10},J_{12}} t_{B_{14},I_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_{13}, I_7, J_{12})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle t_{A_9, J_{12}} t_{B_{13}, I_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{13},I_8,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_I \sum_J \langle 0^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_{13}|\hat{1}_\beta^+ |B_1\rangle \langle I_8|\hat{1}_\beta^- |I_0\rangle \langle J_{12}|\hat{0}_\alpha^+ |J_0\rangle t_{A_9,J_{12}} t_{B_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{13},I_7,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_{10},J_{12}} t_{B_{13},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{13},I_8,J_{12})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_{10},J_{12}} t_{B_{13},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{14},I_7,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,J_{11}} t_{B_{14},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{14},I_8,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|1^J 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{14} |\hat{0}_{\beta}^+ |B_1\rangle \langle I_8 |\hat{1}_{\beta}^- |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,J_{11}} t_{B_{14},I_8} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{14},I_7,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{I} \langle 1^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_7|\hat{0}^-_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_{10},J_{11}} t_{B_{14},I_7} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_{14},I_8,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^J 1^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_{14}|\hat{0}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_{10},J_{11}} t_{B_{14},I_8} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_{13}, I_7, J_{11})\rangle =$$

$$+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|1^J 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_{13}|\hat{1}_{\beta}^+ |B_1\rangle \langle I_7 |\hat{0}_{\beta}^- |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9, J_{11}} t_{B_{13}, I_7}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_{13},I_8,J_{11})\rangle = \\ &+ \frac{-1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|1^J 1^I \rangle \langle A_9 |\hat{0}^-_{\alpha}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_8|\hat{1}^-_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_9,J_{11}} t_{B_{13},I_8} \end{split}$$

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$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_9,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}|J_0 \rangle t_{A_7,B_{14}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_9,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^I |\hat{g}|0^B 0^J \rangle \langle A_8 |\hat{1}^-_\beta |A_1\rangle \langle B_{14} |\hat{0}^+_\beta |B_1\rangle \langle I_9 |\hat{0}^-_\alpha |I_0\rangle \langle J_{12} |\hat{0}^+_\alpha |J_0\rangle t_{A_8,B_{14}} t_{I_9,J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_{14}, I_{10}, J_{12})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^{A}1^{I}|\hat{g}|0^{B}0^{J}\rangle\langle A_{7}|\hat{0}_{\beta}^{-}|A_{1}\rangle\langle B_{14}|\hat{0}_{\beta}^{+}|B_{1}\rangle\langle I_{10}|\hat{1}_{\alpha}^{-}|I_{0}\rangle\langle J_{12}|\hat{0}_{\alpha}^{+}|J_{0}\rangle t_{A_{7},B_{14}}t_{I_{10},J_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_{10},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 1^I |\hat{g}|0^B 0^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}|J_0 \rangle t_{A_8,B_{14}} t_{I_{10},J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_9,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_7,B_{13}} t_{I_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_9,J_{12})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^I |\hat{g}| 1^B 0^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{13} |\hat{1}^+_{\beta} |B_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle t_{A_8,B_{13}} t_{I_9,J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_{13}, I_{10}, J_{12})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^I|\hat{g}|1^B 0^J\rangle \langle A_7|\hat{0}^-_{\beta}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_7, B_{13}}t_{I_{10}, J_{12}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_{13}, I_{10}, J_{12})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^I|\hat{g}|1^B 0^J\rangle \langle A_8|\hat{1}^-_{\beta}|A_1\rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_8, B_{13}}t_{I_{10}, J_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_9,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle t_{A_7,B_{14}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_9,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}|0^B 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle t_{A_8,B_{14}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{14},I_{10},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle t_{A_7,B_{14}} t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{14},I_{10},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 1^I |\hat{g}|0^B 1^J \rangle \langle A_8 |\hat{1}^-_{\beta}|A_1 \rangle \langle B_{14} |\hat{0}^+_{\beta}|B_1 \rangle \langle I_{10} |\hat{1}^-_{\alpha}|I_0 \rangle \langle J_{11} |\hat{1}^+_{\alpha}|J_0 \rangle t_{A_8,B_{14}} t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_9,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_{13}|\hat{1}^+_{\beta}|B_1 \rangle \langle I_9 |\hat{0}^-_{\alpha}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_7,B_{13}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_9,J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^I |\hat{g}| 1^B 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{13} |\hat{1}^+_{\beta} |B_1\rangle \langle I_9 |\hat{0}^-_{\alpha} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle t_{A_8,B_{13}} t_{I_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{13},I_{10},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^I |\hat{g}|1^B 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{13}|\hat{1}^+_{\beta} |B_1\rangle \langle I_{10}|\hat{1}^-_{\alpha} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle t_{A_7,B_{13}} t_{I_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{13},I_{10},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^I |\hat{g}|1^B 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{13} |\hat{1}^+_{\beta} |B_1\rangle \langle I_{10} |\hat{1}^-_{\alpha} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle t_{A_8,B_{13}} t_{I_{10},J_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_7, I_{14}, J_{12})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|0^J 0^I\rangle \langle A_9|\hat{0}_{\alpha}^-|A_1\rangle \langle B_7|\hat{0}_{\beta}^-|B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+|I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+|J_0\rangle t_{A_9, J_{12}}t_{B_7, I_{14}}$$

$$\langle (A_1, B_1)|\hat{H}|(A_9, B_8, I_{14}, J_{12})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_9|\hat{0}_{\alpha}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{14}|\hat{0}_{\beta}^+ |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle t_{A_9, J_{12}} t_{B_8, I_{14}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_7,I_{14},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 0^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_7|\hat{0}^-_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_{10},J_{12}} t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_8,I_{14},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^J 0^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_{10},J_{12}} t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_7,I_{13},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_9 |\hat{0}^-_{\alpha}|A_1 \rangle \langle B_7 |\hat{0}^-_{\beta}|B_1 \rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0 \rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0 \rangle t_{A_9,J_{12}} t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_8,I_{13},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_8 |\hat{1}_\beta^- |B_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle J_{12} |\hat{0}_\alpha^+ |J_0\rangle t_{A_9,J_{12}} t_{B_8,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_7,I_{13},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^J 1^I \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_7|\hat{0}_{\beta}^- |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle t_{A_{10},J_{12}} t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_8,I_{13},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{I} \langle 1^A 1^B |\hat{g}|0^J 1^I \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_8|\hat{1}_{\beta}^- |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_{12}|\hat{0}_{\alpha}^+ |J_0\rangle t_{A_{10},J_{12}} t_{B_8,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_7,I_{14},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^J 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,J_{11}} t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_8,I_{14},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}| 1^J 0^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_8 |\hat{1}_{\beta}^- |B_1\rangle \langle I_{14} |\hat{0}_{\beta}^+ |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,J_{11}} t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_7,I_{14},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^J 0^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_7|\hat{0}^-_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_{10},J_{11}} t_{B_7,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_8,I_{14},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|1^J 0^I \rangle \langle A_{10}|\hat{1}^-_{\alpha}|A_1 \rangle \langle B_8|\hat{1}^-_{\beta}|B_1 \rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0 \rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0 \rangle t_{A_{10},J_{11}} t_{B_8,I_{14}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_7,I_{13},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}| 1^J 1^I \rangle \langle A_9 |\hat{0}_{\alpha}^- |A_1\rangle \langle B_7 |\hat{0}_{\beta}^- |B_1\rangle \langle I_{13} |\hat{1}_{\beta}^+ |I_0\rangle \langle J_{11} |\hat{1}_{\alpha}^+ |J_0\rangle t_{A_9,J_{11}} t_{B_7,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_9,B_8,I_{13},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 1^B |\hat{g}| 1^J 1^I \rangle \langle A_9 |\hat{0}_\alpha^- |A_1\rangle \langle B_8 |\hat{1}_\beta^- |B_1\rangle \langle I_{13} |\hat{1}_\beta^+ |I_0\rangle \langle J_{11} |\hat{1}_\alpha^+ |J_0\rangle t_{A_9,J_{11}} t_{B_8,I_{13}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_{10},B_7,I_{13},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}| 1^J 1^I \rangle \langle A_{10}|\hat{1}_{\alpha}^- |A_1\rangle \langle B_7|\hat{0}_{\beta}^- |B_1\rangle \langle I_{13}|\hat{1}_{\beta}^+ |I_0\rangle \langle J_{11}|\hat{1}_{\alpha}^+ |J_0\rangle t_{A_{10},J_{11}} t_{B_7,I_{13}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_{10}, B_8, I_{13}, J_{11})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^{A}1^{B}|\hat{g}|1^{J}1^{I}\rangle\langle A_{10}|\hat{1}_{\alpha}^{-}|A_{1}\rangle\langle B_{8}|\hat{1}_{\beta}^{-}|B_{1}\rangle\langle I_{13}|\hat{1}_{\beta}^{+}|I_{0}\rangle\langle J_{11}|\hat{1}_{\alpha}^{+}|J_{0}\rangle t_{A_{10},J_{11}}t_{B_{8},I_{13}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_9,I_{14},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_7 |\hat{0}^-_{\beta}|A_1 \rangle \langle B_9 |\hat{0}^-_{\alpha}|B_1 \rangle \langle I_{14} |\hat{0}^+_{\beta}|I_0 \rangle \langle J_{12} |\hat{0}^+_{\alpha}|J_0 \rangle t_{A_7,I_{14}} t_{B_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_9,I_{14},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 0^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_9 |\hat{0}^-_{\alpha} |B_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{12} |\hat{0}^+_{\alpha} |J_0\rangle t_{A_8,I_{14}} t_{B_9,J_{12}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{10},I_{14},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 1^B |\hat{g}|0^I 0^J \rangle \langle A_7 |\hat{0}^-_\beta |A_1\rangle \langle B_{10}|\hat{1}^-_\alpha |B_1\rangle \langle I_{14}|\hat{0}^+_\beta |I_0\rangle \langle J_{12}|\hat{0}^+_\alpha |J_0\rangle t_{A_7,I_{14}} t_{B_{10},J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_8, B_{10}, I_{14}, J_{12})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 1^A 1^B|\hat{g}|0^I 0^J\rangle \langle A_8|\hat{1}^-_{\beta}|A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha}|B_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha}|J_0\rangle t_{A_8, I_{14}}t_{B_{10}, J_{12}}$$

$$\langle (A_1, B_1) | \hat{H} | (A_7, B_9, I_{13}, J_{12}) \rangle =$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 0^B | \hat{g} | 1^I 0^J \rangle \langle A_7 | \hat{0}^-_{\beta} | A_1 \rangle \langle B_9 | \hat{0}^-_{\alpha} | B_1 \rangle \langle I_{13} | \hat{1}^+_{\beta} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_7, I_{13}} t_{B_9, J_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_9,I_{13},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 0^B |\hat{g}| 1^I 0^J \rangle \langle A_8 |\hat{1}^-_\beta |A_1\rangle \langle B_9 |\hat{0}^-_\alpha |B_1\rangle \langle I_{13} |\hat{1}^+_\beta |I_0\rangle \langle J_{12} |\hat{0}^+_\alpha |J_0\rangle t_{A_8,I_{13}} t_{B_9,J_{12}} \end{split}$$

$$\langle (A_1, B_1) | \hat{H} | (A_7, B_{10}, I_{13}, J_{12}) \rangle =$$

$$+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B | \hat{g} | 1^I 0^J \rangle \langle A_7 | \hat{0}^-_{\beta} | A_1 \rangle \langle B_{10} | \hat{1}^-_{\alpha} | B_1 \rangle \langle I_{13} | \hat{1}^+_{\beta} | I_0 \rangle \langle J_{12} | \hat{0}^+_{\alpha} | J_0 \rangle t_{A_7, I_{13}} t_{B_{10}, J_{12}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{10},I_{13},J_{12})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 1^A 1^B |\hat{g}| 1^I 0^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{12}|\hat{0}^+_{\alpha} |J_0\rangle t_{A_8,I_{13}} t_{B_{10},J_{12}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_9, I_{14}, J_{11})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|0^I 1^J\rangle \langle A_7|\hat{0}^-_{\beta}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_{14}|\hat{0}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_7, I_{14}} t_{B_9, J_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_9,I_{14},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|0^I 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_9 |\hat{0}^-_{\alpha} |B_1\rangle \langle I_{14} |\hat{0}^+_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle t_{A_8,I_{14}} t_{B_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{10},I_{14},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 0^A 1^B |\hat{g}|0^I 1^J \rangle \langle A_7 |\hat{0}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{14}|\hat{0}^+_{\beta} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle t_{A_7,I_{14}} t_{B_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{10},I_{14},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}|0^I 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{14}|\hat{0}^+_{\beta} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle t_{A_8,I_{14}} t_{B_{10},J_{11}} \end{split}$$

$$\langle (A_1, B_1)|\hat{H}|(A_7, B_9, I_{13}, J_{11})\rangle =$$

$$+\frac{1}{4}\sum_{I}\sum_{J}\langle 0^A 0^B|\hat{g}|1^I 1^J\rangle \langle A_7|\hat{0}^-_{\beta}|A_1\rangle \langle B_9|\hat{0}^-_{\alpha}|B_1\rangle \langle I_{13}|\hat{1}^+_{\beta}|I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha}|J_0\rangle t_{A_7, I_{13}}t_{B_9, J_{11}}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_9,I_{13},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 0^B |\hat{g}|1^I 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_9 |\hat{0}^-_{\alpha} |B_1\rangle \langle I_{13} |\hat{1}^+_{\beta} |I_0\rangle \langle J_{11} |\hat{1}^+_{\alpha} |J_0\rangle t_{A_8,I_{13}} t_{B_9,J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_7,B_{10},I_{13},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_I \sum_J \langle 0^A 1^B |\hat{g}| 1^I 1^J \rangle \langle A_7 |\hat{0}^-_\beta |A_1\rangle \langle B_{10}|\hat{1}^-_\alpha |B_1\rangle \langle I_{13}|\hat{1}^+_\beta |I_0\rangle \langle J_{11}|\hat{1}^+_\alpha |J_0\rangle t_{A_7,I_{13}} t_{B_{10},J_{11}} \end{split}$$

$$\begin{split} &\langle (A_1,B_1)|\hat{H}|(A_8,B_{10},I_{13},J_{11})\rangle = \\ &+ \frac{1}{4} \sum_{I} \sum_{J} \langle 1^A 1^B |\hat{g}| 1^I 1^J \rangle \langle A_8 |\hat{1}^-_{\beta} |A_1\rangle \langle B_{10}|\hat{1}^-_{\alpha} |B_1\rangle \langle I_{13}|\hat{1}^+_{\beta} |I_0\rangle \langle J_{11}|\hat{1}^+_{\alpha} |J_0\rangle t_{A_8,I_{13}} t_{B_{10},J_{11}} \end{split}$$