

$$\begin{aligned}
& \hbar \left(-\frac{1}{72} \frac{1}{m_e^2} s_\gamma^2 \overline{y_e}^{p11} \left(9 c_\gamma^2 \overline{y_e}^{ri3} \left(y_e^{pi4} y_e^{ri2} + y_e^{pi2} y_e^{ri4} \right) + 5 g_1^2 \left(y_e^{pi4} \delta_{i2i3} + y_e^{pi2} \delta_{i3i4} \right) \right) + \right. \\
& \frac{1}{27} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{3,0}[\mathbf{m}_d^{\mathbf{p}}] - \frac{5}{72} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \\
& \text{LF}_{4,-1}[\mathbf{m}_d^{\mathbf{p}}] + \frac{4}{135} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{5,-2}[\mathbf{m}_d^{\mathbf{p}}] + \\
& \frac{1}{9} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{3,0}[\mathbf{m}_e^{\mathbf{p}}] - \frac{5}{24} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \\
& \text{LF}_{4,-1}[\mathbf{m}_e^{\mathbf{p}}] + \frac{4}{45} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{5,-2}[\mathbf{m}_e^{\mathbf{p}}] + \\
& \frac{1}{18} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{3,0}[\mathbf{m}_l^{\mathbf{p}}] - \frac{5}{48} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \\
& \text{LF}_{4,-1}[\mathbf{m}_l^{\mathbf{p}}] + \frac{2}{45} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{5,-2}[\mathbf{m}_l^{\mathbf{p}}] + \\
& \frac{1}{54} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{3,0}[\mathbf{m}_q^{\mathbf{p}}] - \frac{5}{144} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \\
& \text{LF}_{4,-1}[\mathbf{m}_q^{\mathbf{p}}] + \frac{2}{135} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{5,-2}[\mathbf{m}_q^{\mathbf{p}}] + \\
& \frac{4}{27} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{3,0}[\mathbf{m}_u^{\mathbf{p}}] - \frac{5}{18} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \\
& \text{LF}_{4,-1}[\mathbf{m}_u^{\mathbf{p}}] + \frac{16}{135} \sum_{\mathbf{p}} \mathbf{g}_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{5,-2}[\mathbf{m}_u^{\mathbf{p}}] + \\
& \frac{1}{12} s_\gamma^2 \overline{y_e}^{p11} \left(3 c_\gamma^2 \overline{y_e}^{ri3} \left(y_e^{pi4} y_e^{ri2} + y_e^{pi2} y_e^{ri4} \right) - 2 g_1^2 \left(y_e^{pi4} \delta_{i2i3} + y_e^{pi2} \delta_{i3i4} \right) \right) \text{LF}_{1,2}[\mathbf{m}_\Phi] + \\
& \frac{1}{24} s_\gamma^2 \overline{y_e}^{p11} \left(3 s_\gamma^2 \overline{y_e}^{ri3} \left(y_e^{pi4} y_e^{ri2} + y_e^{pi2} y_e^{ri4} \right) - 2 g_1^2 \left(y_e^{pi4} \delta_{i2i3} + y_e^{pi2} \delta_{i3i4} \right) \right) \text{LF}_{2,1}[\mathbf{m}_\Phi] + \\
& \frac{1}{36} \left(3 g_1^2 s_\gamma^2 \overline{y_e}^{p11} \left(y_e^{pi4} \delta_{i2i3} + y_e^{pi2} \delta_{i3i4} \right) + 2 g_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \right) \text{LF}_{3,0}[\mathbf{m}_\Phi] - \\
& \frac{5}{48} g_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{4,-1}[\mathbf{m}_\Phi] + \frac{2}{45} g_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{5,-2}[\mathbf{m}_\Phi] + \\
& \frac{1}{18} g_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{3,0}[\tilde{\mu}] + \frac{1}{12} g_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{4,-1}[\tilde{\mu}] - \\
& \frac{4}{45} g_1^4 \left(\delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) \text{LF}_{5,-2}[\tilde{\mu}] + \frac{1}{6} g_1^4 \text{LF}_{2,1,0}[\mathbf{m}_1, \mathbf{m}_e^{-i3}] \delta_{i1i4} \delta_{i2i3} + \\
& \frac{1}{6} g_1^4 \text{LF}_{2,2,-1}[\mathbf{m}_1, \mathbf{m}_e^{-i3}] \delta_{i1i4} \delta_{i2i3} - \frac{1}{3} g_1^4 \text{LF}_{3,1,-1}[\mathbf{m}_1, \mathbf{m}_e^{-i3}] \delta_{i1i4} \delta_{i2i3} + \\
& \frac{1}{6} g_1^4 \text{LF}_{4,1,-2}[\mathbf{m}_1, \mathbf{m}_e^{-i3}] \delta_{i1i4} \delta_{i2i3} + \frac{1}{6} g_1^4 \text{LF}_{2,1,0}[\mathbf{m}_1, \mathbf{m}_e^{-i4}] \delta_{i1i2} \delta_{i3i4} + \\
& \frac{1}{6} g_1^4 \text{LF}_{2,2,-1}[\mathbf{m}_1, \mathbf{m}_e^{-i4}] \delta_{i1i2} \delta_{i3i4} - \frac{1}{3} g_1^4 \text{LF}_{3,1,-1}[\mathbf{m}_1, \mathbf{m}_e^{-i4}] \delta_{i1i2} \delta_{i3i4} + \\
& \frac{1}{6} g_1^4 \text{LF}_{4,1,-2}[\mathbf{m}_1, \mathbf{m}_e^{-i4}] \delta_{i1i2} \delta_{i3i4} - \frac{1}{3} g_1^4 \text{LF}_{2,1,0}[\mathbf{m}_e^{-i3}, \mathbf{m}_1] \delta_{i1i4} \delta_{i2i3} + \\
& \frac{1}{6} g_1^4 \text{LF}_{3,1,-1}[\mathbf{m}_e^{-i3}, \mathbf{m}_1] \delta_{i1i4} \delta_{i2i3} - \frac{1}{3} g_1^4 \text{LF}_{2,1,0}[\mathbf{m}_e^{-i4}, \mathbf{m}_1] \delta_{i1i2} \delta_{i3i4} + \\
& \frac{1}{6} g_1^4 \text{LF}_{3,1,-1}[\mathbf{m}_e^{-i4}, \mathbf{m}_1] \delta_{i1i2} \delta_{i3i4} - \frac{1}{6} g_1^2 \overline{y_e}^{p11} \left(y_e^{pi4} \delta_{i2i3} + y_e^{pi2} \delta_{i3i4} \right) \text{LF}_{2,1,0}[\mathbf{m}_l^{\mathbf{p}}, \tilde{\mu}] + \\
& \frac{1}{12} g_1^2 \overline{y_e}^{p11} \left(y_e^{pi4} \delta_{i2i3} + y_e^{pi2} \delta_{i3i4} \right) \text{LF}_{2,2,-1}[\mathbf{m}_l^{\mathbf{p}}, \tilde{\mu}] + \\
& \frac{1}{12} g_1^2 \overline{y_e}^{p11} \left(y_e^{pi4} \delta_{i2i3} + y_e^{pi2} \delta_{i3i4} \right) \text{LF}_{3,1,-1}[\mathbf{m}_l^{\mathbf{p}}, \tilde{\mu}] + \\
& \frac{1}{12} g_1^2 \overline{y_e}^{p11} \left(y_e^{pi4} \delta_{i2i3} + y_e^{pi2} \delta_{i3i4} \right) \text{LF}_{2,1,0}[\tilde{\mu}, \mathbf{m}_l^{\mathbf{p}}] - \\
& \frac{5}{12} g_1^2 \overline{y_e}^{p11} \left(y_e^{pi4} \delta_{i2i3} + y_e^{pi2} \delta_{i3i4} \right) \text{LF}_{3,1,-1}[\tilde{\mu}, \mathbf{m}_l^{\mathbf{p}}] + \\
& \frac{1}{6} g_1^2 \overline{y_e}^{p11} \left(y_e^{pi4} \delta_{i2i3} + y_e^{pi2} \delta_{i3i4} \right) \text{LF}_{4,1,-2}[\tilde{\mu}, \mathbf{m}_l^{\mathbf{p}}] + \\
& \frac{1}{4} g_1^4 \text{LF}_{2,1,1,-1}[\mathbf{m}_1, \mathbf{m}_e^{-i2}, \mathbf{m}_e^{-i4}] \delta_{i1i2} \delta_{i3i4} + \frac{1}{2} g_1^4 \mathbf{m}_1^2 \text{LF}_{2,1,1,0}[\mathbf{m}_1, \mathbf{m}_e^{-i2}, \mathbf{m}_e^{-i4}] \delta_{i1i2} \delta_{i3i4} + \\
& \frac{1}{4} g_1^4 \text{LF}_{2,1,1,-1}[\mathbf{m}_1, \mathbf{m}_e^{-i4}, \mathbf{m}_e^{-i3}] \delta_{i1i4} \delta_{i2i3} + \frac{1}{2} g_1^4 \mathbf{m}_1^2 \text{LF}_{2,1,1,0}[\mathbf{m}_1, \mathbf{m}_e^{-i4}, \mathbf{m}_e^{-i3}] \delta_{i1i4} \delta_{i2i3} + \\
& \left. \frac{1}{8} \overline{y_e}^{p11} \overline{y_e}^{ri3} \left(y_e^{pi4} y_e^{ri2} + y_e^{pi2} y_e^{ri4} \right) \text{LF}_{2,1,1,-1}[\tilde{\mu}, \mathbf{m}_l^{\mathbf{p}}, \mathbf{m}_l^{\mathbf{r}}] \right)
\end{aligned}$$