FCI Questions

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1 one difference

$$\langle\Psi|H_0|\Psi(k \to k')\rangle = h^{\alpha\beta} (-1)^{\varepsilon\left(\kappa_1,\ldots,\kappa_i',\ldots,\kappa_j,\ldots,\kappa_n\right)} \langle 0| \left(\prod_{\kappa=(\kappa_n\ldots\kappa_2)} a_\kappa\right) a_1 a_\alpha^\dagger a_\beta a_{\kappa_{1'}}^\dagger \left(\prod_{\kappa'=(\kappa_2\ldots\kappa_n)} a_{\kappa'}^\dagger\right)|0\rangle \tag{1}$$

$$= \langle 0| \left(\prod_{\kappa=(\kappa_n\ldots\kappa_2)} a_\kappa\right) a_1 a_\alpha^\dagger \delta_{\beta\kappa_{1'}} \left(\prod_{\kappa'=(\kappa_2\ldots\kappa_n)} a_{\kappa'}^\dagger\right)|0\rangle \tag{2}$$

$$-0 \tag{3}$$

$$= \langle 0| \left(\prod_{\kappa=(\kappa_n\ldots\kappa_2)} a_\kappa\right) \delta_{\alpha\kappa_1} \delta_{\beta\kappa_{1'}} \left(\prod_{\kappa'=(\kappa_2\ldots\kappa_n)} a_{\kappa'}^\dagger\right)|0\rangle \tag{4}$$

$$= (-1)^{\varepsilon\left(\kappa_1,\ldots,\kappa_i',\ldots,\kappa_n\right)} h^{11'} \tag{5}$$

$$= (-1)^{\varepsilon\left(\kappa_1,\ldots,\kappa_i',\ldots,\kappa_n\right)} h^{(1)(1')} \delta_{[1][1']} \tag{6}$$