Multistate Hylleraas type equation for rotated functions $|\tilde{N}\rangle$:

$$E_L^{(2)} = \sum_{\Omega\Omega'}\sum_{MN}\langle\tilde{M}|\hat{T}^{\dagger}_{\Omega',ML}(\hat{f}-E_L^{(f)})\hat{T}_{\Omega,LN}|\tilde{N}\rangle + \langle\tilde{M}|\hat{T}^{\dagger}_{\Omega',ML}\hat{H}|\tilde{N}\rangle. \tag{1}$$

Differentiate with respect to T-amplitude, $T^{\dagger}_{\Omega',ML}$, to get amplitude equation:

$$\frac{\partial E_L^{(2)}}{\partial T_{\Omega'}^{ML}} = \sum_{\Omega}\sum_{N}\langle\tilde{M}|\hat{E}^{\dagger}_{\Omega'}(\hat{f}-E_L^{(f)})\hat{T}_{\Omega,LN}|\tilde{N}\rangle + \langle\tilde{M}|\hat{E}^{\dagger}_{\Omega'}\hat{H}|\tilde{N}\rangle = 0 \tag{2}$$

Left hand side should be stationary with respect to variations in T-amplitudes, in other words, we should minimize the residual $r_{LN,\Omega}$,

$$r_{LN,\Omega}[T_{\Omega,LN}] = \langle\tilde{M}|\hat{E}^{\dagger}_{\Omega'}(\hat{f}-E_L^{(f)})\hat{T}_{\Omega,LN}|\tilde{N}\rangle = 0, \tag{3}$$

with respect to variations in $T_{\Omega,LN}$;

$$r_{LN,\Omega}[T_{\Omega,LN}] = r_{LN,\Omega}[T_{\Omega,LN} + \Delta T_{\Omega,LN}] \tag{4}$$

$$r_{LN,\Omega}[T_{\Omega,LN}] = r_{LN,\Omega}[T_{\Omega,LN}] - \langle\tilde{M}|\hat{E}^{\dagger}_{\Omega'}(\hat{f}-E_L^{(f)})\Delta T_{\Omega,LN}\hat{E}_{\Omega}|\tilde{N}\rangle \tag{5}$$

leading to

$$\frac{r_{LN,\Omega}[T_{\Omega,LN}]}{(r_{LN,\Omega}[T_{\Omega,LN}] - \langle\tilde{M}|\hat{E}^{\dagger}_{\Omega'}(\hat{f}-E_L^{(f)})\hat{E}_{\Omega}|\tilde{N}\rangle\Delta T_{\Omega,LN})} = 1 \tag{6}$$

assuming we are not too far from convergence

$$r_{LN,\Omega}[T_{\Omega,LN}] \ll \langle\tilde{M}|\hat{E}^{\dagger}_{\Omega'}(\hat{f}-E_L^{(f)})\hat{E}_{\Omega}|\tilde{N}\rangle\Delta T_{\Omega,LN} \tag{7}$$

so

$$\Delta T_{\Omega,LN} \approx \frac{r_{LN,\Omega}[T_{\Omega,LN}]}{\langle\tilde{M}|\hat{E}^{\dagger}_{\Omega'}(\hat{f}-E_L^{(f)})\hat{E}_{\Omega}|\tilde{N}\rangle}. \tag{8}$$

The states $\{|\tilde{N}\rangle\}$ diagonalize the Fock operator, hence $M = N$. Furthermore, the off diagonal elements of the Fock operator (in terms of molecular orbital indexes) are small, so we need only consider terms where $\Omega = \Omega'$. This leads to

$$\Delta T_{\Omega,LN} \approx \frac{r_{LN,\Omega}[T_{\Omega,LN}]}{\langle\tilde{N}|\hat{E}^{\dagger}_{\Omega}(\hat{f}-E_L^{(f)})\hat{E}_{\Omega}|\tilde{N}\rangle}. \tag{9}$$