



$$\frac{d\sigma}{d\Omega} = \frac{\mu_i \mu_f}{(2\pi\hbar^2)^2} \frac{k_f}{k_i} \left| T^{(1)} + T_{succ}^{(2)} - T_{NO}^{(1)} \right|^2$$

$$\phi_t(\mathbf{r}_{p1}, \sigma_1, \mathbf{r}_{p2}, \sigma_2) \chi_{m_s}^{1/2}(\sigma_p) \psi_A(\xi_A) \chi_{tA}^{(+)}(\mathbf{r}_{tA}) \quad \chi_{m_s}^{1/2}(\sigma_p) \psi_B(\xi_B) \chi_{pB}^{(-)}(\mathbf{r}_{pB})$$

$$(\phi_d(\mathbf{r}_{p1}, \sigma_1) \phi_d(\mathbf{r}_{p2}, \sigma_2) \chi_{tA}^{(+)}(\mathbf{r}_{tA}))$$

$$\begin{aligned} \Psi_{A+2}(\xi_A, \mathbf{r}_{A1}, \sigma_1, \mathbf{r}_{A2}, \sigma_2) &= \psi_A(\xi_A) \sum_{l_i, j_i} [\phi_{l_i, j_i}^{A+2}(\mathbf{r}_{A1}, \sigma_1, \mathbf{r}_{A2}, \sigma_2)]_0^0 \\ &= \psi_A(\xi_A) \sum_{nm} a_{nm} [\varphi_{n, l_i, j_i}^{A+2}(\mathbf{r}_{A1}, \sigma_1) \varphi_{m, l_i, j_i}^{A+2}(\mathbf{r}_{A2}, \sigma_2)]_0^0 \end{aligned}$$

$$\begin{aligned} T^{(1)} &= 2 \sum_{\sigma_1, \sigma_2, \sigma_p} \int d\xi_A d\mathbf{r}_{tA} d\mathbf{r}_{p1} d\mathbf{r}_{A2} \psi_A(\xi_A) \sum_{l_i, j_i} [\phi_{l_i, j_i}^{A+2}(\mathbf{r}_{A1}, \sigma_1, \mathbf{r}_{A2}, \sigma_2)]_0^{0*} \\ &\quad \times \chi_{pB}^{(-)*}(\mathbf{r}_{pB}) \chi_{m_s}^{1/2*}(\sigma_p) v(r_{p1}) \phi_t(\mathbf{r}_{p1}, \sigma_1, \mathbf{r}_{p2}, \sigma_2) \chi_{m_s}^{1/2}(\sigma_p) \psi_A(\xi_A) \chi_{tA}^{(+)}(\mathbf{r}_{tA}) \\ &= 2 \sum_{\sigma_1, \sigma_2, \sigma_p} \int d\mathbf{r}_{tA} d\mathbf{r}_{p1} d\mathbf{r}_{A2} \sum_{l_i, j_i} [\phi_{l_i, j_i}^{A+2}(\mathbf{r}_{A1}, \sigma_1, \mathbf{r}_{A2}, \sigma_2)]_0^{0*} \\ &\quad \times \chi_{pB}^{(-)*}(\mathbf{r}_{pB}) \chi_{m_s}^{1/2*}(\sigma_p) v(r_{p1}) \phi_t(\mathbf{r}_{p1}, \sigma_1, \mathbf{r}_{p2}, \sigma_2) \chi_{m_s}^{1/2}(\sigma_p) \chi_{tA}^{(+)}(\mathbf{r}_{tA}) \end{aligned}$$