

$$\mathcal{H}_N(t) = \sum_i C_i(t) \cdot \Phi_i(N) \quad \leftrightarrow \quad \mathcal{H}_{\text{VCN}}(N, \vec{\eta}) = \sum_i \eta_i \cdot \Phi_i(N)$$

$$C_1(t) = \Pi_A(0, 1, t) \quad \Phi_1(N) = J \sum_l \sum_{\langle l < m \rangle^{+(x)}} \sum_K \frac{\Psi_K}{\Psi_N} \langle N | \hat{F}_A(l, m) | K \rangle$$

$$C_2(t) = \Pi_B(0, 1, t) \quad \Phi_2(N) = J \sum_l \sum_{\langle l < m \rangle^{+(x)}} \sum_K \frac{\Psi_K}{\Psi_N} \langle N | \hat{F}_B(l, m) | K \rangle$$

$$C_3(t) = \Pi_C(0, 1, t) \quad \Phi_3(N) = J \sum_l \sum_{\langle l < m \rangle^{+(x)}} \sum_K \frac{\Psi_K}{\Psi_N} \langle N | \hat{F}_C(l, m) | K \rangle$$

$$C_4(t) = \Pi_A(1, 0, t) \quad \Phi_4(N) = J \sum_l \sum_{\langle l > m \rangle^{+(x)}} \sum_K \frac{\Psi_K}{\Psi_N} \langle N | \hat{F}_A(l, m) | K \rangle$$

$$C_5(t) = \Pi_B(1, 0, t) \quad \Phi_5(N) = J \sum_l \sum_{\langle l > m \rangle^{+(x)}} \sum_K \frac{\Psi_K}{\Psi_N} \langle N | \hat{F}_B(l, m) | K \rangle$$

$$C_6(t) = \Pi_C(1, 0, t) \quad \Phi_6(N) = J \sum_l \sum_{\langle l > m \rangle^{+(x)}} \sum_K \frac{\Psi_K}{\Psi_N} \langle N | \hat{F}_C(l, m) | K \rangle$$

$$C_7(t) = \Pi_A(0, M, t) \quad \Phi_7(N) = J \sum_l \sum_{\langle l < m \rangle^{+(y)}} \sum_K \frac{\Psi_K}{\Psi_N} \langle N | \hat{F}_A(l, m) | K \rangle$$

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