

78th Eigenvector

$$N_e = 3 \quad s = \frac{1}{2} \quad m_s = \frac{1}{2}$$

Irred. Representation : $\Gamma_{4,3}$

$$E_{78} = \frac{1}{3} \left(-J + 3t + 2U + 14W - 2 \cos(\theta_4) \sqrt{A_5} \right)$$

$$\begin{aligned} |\Psi_{78}\rangle &= |3, \frac{1}{2}, \frac{1}{2}, \Gamma_{4,3}\rangle \\ &= C_{78,1} (|002u\rangle - |00u2\rangle - |02u0\rangle + |0u20\rangle + |200u\rangle + |2u00\rangle - |u002\rangle - |u200\rangle) \\ &+ C_{78,2} (|020u\rangle + |0u02\rangle - |20u0\rangle - |u020\rangle) \\ &+ C_{78,3} (|0duu\rangle - |0uud\rangle + |d0uu\rangle - |duu0\rangle - |u0du\rangle - |ud0u\rangle + |uu0d\rangle + |uud0\rangle) \end{aligned}$$

$$C_{78-1} = \frac{t(J - 4t + U - 2W + 2 \cos(\theta_4) \sqrt{A_5})}{2\sqrt{2}}$$

$$C_{78-2} = \frac{t(J + 12t + U - 2W + 2 \cos(\theta_4) \sqrt{A_5})}{3\sqrt{2}}$$

$$C_{78-3} = \frac{-15t^2 - 5Ut - U^2 + J(t + 2U + 8W)}{6\sqrt{2}}$$

$$+ \left(\frac{A_{19}^2 + 6(4J - 13t - 10U - 32W)W + 6(t + 2U + 8W) \cos(\theta_4) \sqrt{A_5}}{18\sqrt{2}} \right)$$

$$N_{78} = 2\sqrt{2C_{78,1}^2 + C_{78,2}^2 + 2C_{78,3}^2}$$