

## 75<sup>th</sup> Eigenvector

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

Irred. Representation :  $\Gamma_{4,2}$

$$E_{75} = \frac{1}{3} \left( -J + 3t + 2U + 14W - 2 \cos(\theta_4) \sqrt{A_5} \right)$$

$$\begin{aligned} |\Psi_{75}\rangle &= \left| 3, \frac{1}{2}, \frac{1}{2}, \Gamma_{4,2} \right\rangle \\ &= C_{75,1} (|002u\rangle - |00u2\rangle + |020u\rangle - |0u02\rangle - |20u0\rangle - |2u00\rangle + |u020\rangle + |u200\rangle) \\ &+ C_{75,2} (|02u0\rangle + |0u20\rangle - |200u\rangle - |u002\rangle) \\ &+ C_{75,3} (|0duu\rangle - |0udu\rangle + |d0uu\rangle + |du0u\rangle - |u0ud\rangle + |udu0\rangle - |uu0d\rangle - |uud0\rangle) \end{aligned}$$

$$C_{75-1} = -\frac{t(J - 4t + U - 2W + 2 \cos(\theta_4) \sqrt{A_5})}{2\sqrt{2}}$$

$$C_{75-2} = \frac{t(J + 12t + U - 2W + 2 \cos(\theta_4) \sqrt{A_5})}{3\sqrt{2}}$$

$$C_{75-3} = \frac{15t^2 + 5Ut + U^2 - J(t + 2U + 8W)}{6\sqrt{2}}$$

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

$$N_{75} = 2\sqrt{2C_{75,1}^2 + C_{75,2}^2 + 2C_{75,3}^2}$$