

## 203<sup>rd</sup> Eigenvector

$$N_e = 5 \quad s = \frac{1}{2} \quad m_s = \frac{1}{2}$$

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

$$E_{203} = \frac{1}{3} \left( -J - 3t + 5U + 50W + \left( \cos(\theta_5) - \sqrt{3} \sin(\theta_5) \right) \sqrt{A_6} \right)$$

$$\begin{aligned} |\Psi_{203}\rangle &= |5, \frac{1}{2}, \frac{1}{2}, \Gamma_{4,2}\rangle \\ &= C_{203,1} (|022u\rangle - |20u2\rangle - |2u02\rangle + |u220\rangle) \\ &+ C_{203,2} (|02u2\rangle + |0u22\rangle - |202u\rangle - |220u\rangle + |22u0\rangle + |2u20\rangle - |u022\rangle - |u202\rangle) \\ &+ C_{203,3} (|2duu\rangle - |2udu\rangle + |d2uu\rangle + |du2u\rangle - |u2ud\rangle + |udu2\rangle - |uu2d\rangle - |uud2\rangle) \end{aligned}$$

$$\begin{aligned} C_{203-1} &= \frac{1}{6} \left( J^2 + (t - 2(U + 18W))J + 27t^2 + 9U^2 - 11tU - 98tW + 164UW \right) \\ &+ \left( \frac{1}{18} \left( -A_{23}^2 + 12W(41U + 209W) + 3(J + 4t - 3U - 34W) \left( \sqrt{3} \sin(\theta_5) - \cos(\theta_5) \right) \sqrt{A_6} \right) \right) \end{aligned}$$

$$\begin{aligned} C_{203-2} &= \frac{1}{3}t(J + 6t + U) \\ &+ \left( \frac{1}{6}t \left( 2(U - 2W) + \left( \cos(\theta_5) - \sqrt{3} \sin(\theta_5) \right) \sqrt{A_6} \right) \right) \end{aligned}$$

$$\begin{aligned} C_{203-3} &= \frac{1}{6}t(-J + 12t - U) \\ &+ \left( -\frac{1}{6}t \left( U - 2W + \left( \sqrt{3} \sin(\theta_5) - \cos(\theta_5) \right) \sqrt{A_6} \right) \right) \end{aligned}$$

$$N_{203} = 2\sqrt{C_{203,1}^2 + 2(C_{203,2}^2 + C_{203,3}^2)}$$