

181st Eigenvector

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

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

$$E_{181} = \frac{1}{3} \left(-J - 3t + 5U + 50W + \left(\cos(\theta_5) + \sqrt{3} \sin(\theta_5) \right) \sqrt{A_6} \right)$$

$$\begin{aligned} |\Psi_{181}\rangle &= \left| 5, \frac{1}{2}, -\frac{1}{2}, \Gamma_{4,3} \right\rangle \\ &= C_{181,1} (|022d\rangle + |0d22\rangle - |20d2\rangle + |220d\rangle - |22d0\rangle + |2d02\rangle - |d022\rangle - |d220\rangle) \\ &+ C_{181,2} (|02d2\rangle - |202d\rangle - |2d20\rangle + |d202\rangle) \\ &+ C_{181,3} (|2ddu\rangle - |2udd\rangle + |d2ud\rangle - |dd2u\rangle - |ddu2\rangle + |du2d\rangle - |u2dd\rangle + |udd2\rangle) \end{aligned}$$

$$\begin{aligned} C_{181-1} &= \frac{1}{3}t(J + 6t + U) \\ &+ \left(\frac{1}{6}t \left(2(U - 2W) + \left(\cos(\theta_5) + \sqrt{3} \sin(\theta_5) \right) \sqrt{A_6} \right) \right) \end{aligned}$$

$$\begin{aligned} C_{181-2} &= \frac{1}{6} \left(J^2 + (t - 2(U + 18W))J + 27t^2 + 9U^2 - 11tU - 98tW + 164UW \right) \\ &+ \left(\frac{1}{18} \left(-A_{24}^2 + 12W(41U + 209W) - 3(J + 4t - 3U - 34W) \left(\cos(\theta_5) + \sqrt{3} \sin(\theta_5) \right) \sqrt{A_6} \right) \right) \end{aligned}$$

$$\begin{aligned} C_{181-3} &= \frac{1}{6}t(J - 12t + U) \\ &+ \left(\frac{1}{6}t \left(U - 2W - \left(\cos(\theta_5) + \sqrt{3} \sin(\theta_5) \right) \sqrt{A_6} \right) \right) \end{aligned}$$

$$N_{181} = 2\sqrt{2C_{181,1}^2 + C_{181,2}^2 + 2C_{181,3}^2}$$