

109th Eigenvector

$$N_e = 4 \quad s = 1 \quad m_s = -1$$

Irred. Representation : $\Gamma_{5,3}$

$$E_{109} = \frac{A_{18}}{3}$$

$$\begin{aligned} |\Psi_{109}\rangle &= |4, 1, -1, \Gamma_{5,3}\rangle \\ &= C_{109,1} (|02dd\rangle - |0d2d\rangle + |20dd\rangle - |2d0d\rangle + |d0d2\rangle + |d2d0\rangle - |dd02\rangle - |dd20\rangle) \\ &+ C_{109,2} (|0dd2\rangle - |2dd0\rangle - |d02d\rangle + |d20d\rangle) \\ &+ C_{109,3} (|dddu\rangle - |ddud\rangle - |dudd\rangle + |uddd\rangle) \end{aligned}$$

$$C_{109-1} = -\frac{1}{6}t (3J + 6U + 60W - 2A_{18})$$

$$C_{109-2} = 4t^2$$

$$\begin{aligned} C_{109-3} &= \frac{1}{8} (J^2 + 4(U + 10W)J + 4(U^2 - 8t^2)) \\ &+ \left(\frac{1}{18} (30W - A_{18}) (3J + 6U + 30W - A_{18}) \right) \end{aligned}$$

$$N_{109} = 2\sqrt{2C_{109,1}^2 + C_{109,2}^2 + C_{109,3}^2}$$