

45th Eigenvector

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

Irred. Representation : $\Gamma_{3,1}$

$$E_{45} = \frac{1}{2} (-J - 2t + U + 10W + \sqrt{A_4})$$

$$\begin{aligned} |\Psi_{45}\rangle &= |3, \frac{1}{2}, -\frac{1}{2}, \Gamma_{3,1}\rangle \\ &= C_{45,1} (|002d\rangle + |00d2\rangle + |02d0\rangle + |0d20\rangle + |200d\rangle + |2d00\rangle + |d002\rangle + |d200\rangle) \\ &+ C_{45,2} (|020d\rangle + |0d02\rangle + |20d0\rangle + |d020\rangle) \\ &+ C_{45,3} (|0ddu\rangle - |0udd\rangle - |d0ud\rangle - |dd0u\rangle + |ddu0\rangle + |du0d\rangle + |u0dd\rangle - |udd0\rangle) \end{aligned}$$

$$C_{45-1} = -\frac{t}{2\sqrt{2}}$$

$$C_{45-2} = \frac{t}{\sqrt{2}}$$

$$C_{45-3} = \frac{J - 2t + U - 2W - \sqrt{A_4}}{4\sqrt{2}}$$

$$N_{45} = 2\sqrt{2C_{45,1}^2 + C_{45,2}^2 + 2C_{45,3}^2}$$