

37th Eigenvector

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

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

$$E_{37} = \frac{A_8}{3}$$

$$\begin{aligned} |\Psi_{37}\rangle &= |3, \frac{1}{2}, \frac{1}{2}, \Gamma_{3,1}\rangle \\ &= C_{37,1} (|02u\rangle - |0u2\rangle) \\ &+ C_{37,2} (|20u\rangle - |2u0\rangle) \\ &+ C_{37,3} (|duu\rangle) \\ &+ C_{37,4} (|u02\rangle - |u20\rangle) \\ &+ C_{37,5} (|udu\rangle + |uud\rangle) \end{aligned}$$

$$\begin{aligned} C_{37-1} &= \frac{1}{6}t(2J - 9t + 2U) \\ &+ \left(\frac{1}{6}t \left(2(U - W) + (\cos(\theta_1) + \sqrt{3}\sin(\theta_1)) \sqrt{A_2} \right) \right) \end{aligned}$$

$$\begin{aligned} C_{37-2} &= \frac{1}{12} \left(18t^2 + 2Ut - 29Wt - 18UW + J(11t + 6(U + 2W)) \right) \\ &+ \left(\frac{1}{36} \left(-2A_8^2 + (-6J + 9t + 6U + 30W)A_8 - 54W(U + 2W) + 3t (\cos(\theta_1) + \sqrt{3}\sin(\theta_1)) \sqrt{A_2} \right) \right) \end{aligned}$$

$$\begin{aligned} C_{37-3} &= -\frac{1}{3}t(J + 9t + U) \\ &+ \left(\frac{1}{3}t \left(-U + W + (\cos(\theta_1) + \sqrt{3}\sin(\theta_1)) \sqrt{A_2} \right) \right) \end{aligned}$$

$$\begin{aligned} C_{37-4} &= \frac{1}{12} \left(36t^2 - 2Ut - 25Wt - 18UW + J(7t + 6(U + 2W)) \right) \\ &+ \left(\frac{1}{36} \left(-2A_8^2 + (-6J + 9t + 6U + 30W)A_8 - 54W(U + 2W) - 3t (\cos(\theta_1) + \sqrt{3}\sin(\theta_1)) \sqrt{A_2} \right) \right) \end{aligned}$$

$$\begin{aligned} C_{37-5} &= \frac{1}{6}t(J + 9t + U) \\ &+ \left(\frac{1}{6}t \left(U - W - (\cos(\theta_1) + \sqrt{3}\sin(\theta_1)) \sqrt{A_2} \right) \right) \end{aligned}$$

$$N_{37} = \sqrt{2C_{37,1}^2 + 2C_{37,2}^2 + C_{37,3}^2 + 2C_{37,4}^2 + 2C_{37,5}^2}$$