49$^{\text{th}}$ **Eigenvector**

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

Irred. Representation : $\Gamma_{4,1}$

$$E_{49} \;=\; \frac{A_{21}}{3}$$

$$
\begin{aligned}
|\Psi_{49}\rangle \;=\;& |3, \tfrac{1}{2}, -\tfrac{1}{2}, \Gamma_{4,1}\rangle \\
=\;& C_{49,1}\left(|002d\rangle + |00d2\rangle - |2d00\rangle - |d200\rangle\right) \\
+\;& C_{49,2}\left(|020d\rangle + |02d0\rangle - |0d02\rangle - |0d20\rangle + |200d\rangle + |20d0\rangle - |d002\rangle - |d020\rangle\right) \\
+\;& C_{49,3}\left(|0ddu\rangle - |0dud\rangle + |d0du\rangle - |d0ud\rangle - |du0d\rangle - |dud0\rangle + |ud0d\rangle + |udd0\rangle\right)
\end{aligned}
$$

$$
\begin{aligned}
C_{49-1} \;=\;& -\frac{t(J + 12t + U)}{3\sqrt{2}} \\
&+ \left(\frac{t\left(-U + 2W + \left(\cos(\theta_4) + \sqrt{3}\sin(\theta_4)\right)\sqrt{A_5}\right)}{3\sqrt{2}} \right) \\
C_{49-2} \;=\;& \frac{t(-J + 4t - U)}{2\sqrt{2}} \\
&+ \left(\frac{t\left(-U + 2W + \left(\cos(\theta_4) + \sqrt{3}\sin(\theta_4)\right)\sqrt{A_5}\right)}{2\sqrt{2}} \right) \\
C_{49-3} \;=\;& \frac{A_{21}^2 - 3(t + 2U + 8W)A_{21} + 9\left(-4t^2 + (U + 4W)t + (U + 4W)^2\right)}{18\sqrt{2}} \\
N_{49} \;=\;& 2\sqrt{C_{49,1}^2 + 2\left(C_{49,2}^2 + C_{49,3}^2\right)}
\end{aligned}
$$