50^{th} Eigenvector

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

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

$$E_{50} \;=\; \frac{A_{20}}{3}$$

$$\begin{aligned}
|\Psi_{50}\rangle &= |3,\frac{1}{2},-\frac{1}{2},\Gamma_{4,1}\rangle \\
&= C_{50,1}\left(|002d\rangle + |00d2\rangle - |2d00\rangle - |d200\rangle\right) \\
&+ C_{50,2}\left(|020d\rangle + |02d0\rangle - |0d02\rangle - |0d20\rangle + |200d\rangle + |20d0\rangle - |d002\rangle - |d020\rangle\right) \\
&+ C_{50,3}\left(|0ddu\rangle - |0dud\rangle + |d0du\rangle - |d0ud\rangle - |du0d\rangle - |dud0\rangle + |ud0d\rangle + |udd0\rangle\right)
\end{aligned}$$

$$\begin{aligned}
C_{50-1} &= -\frac{t(J+12t+U)}{3\sqrt{2}} \\
&\quad + \left(-\frac{t\left(U-2W+\left(\sqrt{3}\sin\left(\theta_4\right)-\cos\left(\theta_4\right)\right)\sqrt{A_5}\right)}{3\sqrt{2}}\right) \\
C_{50-2} &= \frac{t(-J+4t-U)}{2\sqrt{2}} \\
&\quad + \left(-\frac{t\left(U-2W+\left(\sqrt{3}\sin\left(\theta_4\right)-\cos\left(\theta_4\right)\right)\sqrt{A_5}\right)}{2\sqrt{2}}\right) \\
C_{50-3} &= \frac{A_{20}^2-3(t+2U+8W)A_{20}+9\left(-4t^2+(U+4W)t+(U+4W)^2\right)}{18\sqrt{2}} \\
N_{50} &= 2\sqrt{C_{50,1}^2+2\left(C_{50,2}^2+C_{50,3}^2\right)}
\end{aligned}$$