80^{th} Eigenvector

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

Irred. Representation : $\boldsymbol{\Gamma_{4,3}}$

$$E_{80} = \frac{A_{20}}{3}$$

$$\begin{aligned}
|\Psi_{80}\rangle &= |3, \frac{1}{2}, \frac{1}{2}, \Gamma_{4,3}\rangle \\
&= C_{80,1}\left(|002u\rangle - |00u2\rangle - |02u0\rangle + |0u20\rangle + |200u\rangle + |2u00\rangle - |u002\rangle - |u200\rangle\right) \\
&+ C_{80,2}\left(|020u\rangle + |0u02\rangle - |20u0\rangle - |u020\rangle\right) \\
&+ C_{80,3}\left(|0duu\rangle - |0uud\rangle + |d0uu\rangle - |duu0\rangle - |u0du\rangle - |ud0u\rangle + |uu0d\rangle + |uud0\rangle\right)
\end{aligned}$$

$$\begin{aligned}
C_{80-1} &= \frac{t(J-4t+U)}{2\sqrt{2}} \\
&+ \left(\frac{t\left(U - 2W + \left(\sqrt{3}\sin(\theta_4) - \cos(\theta_4)\right)\sqrt{A_5}\right)}{2\sqrt{2}}\right) \\
C_{80-2} &= \frac{t(J+12t+U)}{3\sqrt{2}} \\
&+ \left(\frac{t\left(U - 2W + \left(\sqrt{3}\sin(\theta_4) - \cos(\theta_4)\right)\sqrt{A_5}\right)}{3\sqrt{2}}\right) \\
C_{80-3} &= \frac{A_{20}^2 - 3(t+2U+8W)A_{20} + 9\left(-4t^2 + (U+4W)t + (U+4W)^2\right)}{18\sqrt{2}} \\
N_{80} &= 2\sqrt{2C_{80,1}^2 + C_{80,2}^2 + 2C_{80,3}^2}
\end{aligned}$$