202^{nd} Eigenvector

$\boldsymbol{N_e \;=\; 5 \qquad s = \frac{1}{2} \qquad m_s = \frac{1}{2}}$

Irred. Representation : $\boldsymbol{\Gamma_{4,2}}$

$$E_{202} = \frac{1}{3}\left(-J - 3t + 5U + 50W + \left(\cos(\theta_5) + \sqrt{3}\sin(\theta_5)\right)\sqrt{A_6}\right)$$

$$\begin{aligned}
|\Psi_{202}\rangle &= |5, \frac{1}{2}, \frac{1}{2}, \Gamma_{4,2}\rangle \\
&= C_{202,1}\left(|022u\rangle - |20u2\rangle - |2u02\rangle + |u220\rangle\right) \\
&+ C_{202,2}\left(|02u2\rangle + |0u22\rangle - |202u\rangle - |220u\rangle + |22u0\rangle + |2u20\rangle - |u022\rangle - |u202\rangle\right) \\
&+ C_{202,3}\left(|2duu\rangle - |2udu\rangle + |d2uu\rangle + |du2u\rangle - |u2ud\rangle + |udu2\rangle - |uu2d\rangle - |uud2\rangle\right)
\end{aligned}$$

$$\begin{aligned}
C_{202-1} &= \frac{1}{6}\left(J^2 + (t - 2(U + 18W))J + 27t^2 + 9U^2 - 11tU - 98tW + 164UW\right) \\
&+ \left(\frac{1}{18}\left(-A_{24}^2 + 12W(41U + 209W) - 3(J + 4t - 3U - 34W)\left(\cos(\theta_5) + \sqrt{3}\sin(\theta_5)\right)\sqrt{A_6}\right)\right) \\
C_{202-2} &= \frac{1}{3}t(J + 6t + U) \\
&+ \left(\frac{1}{6}t\left(2(U - 2W) + \left(\cos(\theta_5) + \sqrt{3}\sin(\theta_5)\right)\sqrt{A_6}\right)\right) \\
C_{202-3} &= \frac{1}{6}t(-J + 12t - U) \\
&+ \left(\frac{1}{6}t\left(-U + 2W + \left(\cos(\theta_5) + \sqrt{3}\sin(\theta_5)\right)\sqrt{A_6}\right)\right) \\
N_{202} &= 2\sqrt{C_{202,1}^2 + 2\left(C_{202,2}^2 + C_{202,3}^2\right)}
\end{aligned}$$