201^{st} Eigenvector

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

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

$$E_{201} \;=\; \frac{1}{3}\left(-J - 3t + 5U + 50W - 2\cos\left(\theta_5\right)\sqrt{A_6}\right)$$

$$\begin{aligned}
|\Psi_{201}\rangle \;&=\; |5, \frac{1}{2}, \frac{1}{2}, \Gamma_{4,2}\rangle \\
&=\; C_{201,1}\left(|022u\rangle - |20u2\rangle - |2u02\rangle + |u220\rangle\right) \\
&+\; C_{201,2}\left(|02u2\rangle + |0u22\rangle - |202u\rangle - |220u\rangle + |22u0\rangle + |2u20\rangle - |u022\rangle - |u202\rangle\right) \\
&+\; C_{201,3}\left(|2duu\rangle - |2udu\rangle + |d2uu\rangle + |du2u\rangle - |u2ud\rangle + |udu2\rangle - |uu2d\rangle - |uud2\rangle\right)
\end{aligned}$$

$$\begin{aligned}
C_{201-1} \;&=\; \frac{5t^2}{2} + 3Ut + 34Wt - U^2 + J(-t + U + 8W) \\
&\quad + \left(\frac{1}{18}\left(-A_{22}^2 + 3(J + 4t - 3U - 34W)A_{22} + 36(17t - 13U - 72W)W\right)\right) \\
C_{201-2} \;&=\; \frac{1}{3}t\left(J + 6t + U - 2W - \cos\left(\theta_5\right)\sqrt{A_6}\right) \\
C_{201-3} \;&=\; \frac{1}{6}t\left(-J + 12t - U + 2W - 2\cos\left(\theta_5\right)\sqrt{A_6}\right) \\
N_{201} \;&=\; 2\sqrt{C_{201,1}^2 + 2\left(C_{201,2}^2 + C_{201,3}^2\right)}
\end{aligned}$$