199^{th} Eigenvector

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

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

$$E_{199} = \frac{1}{3}\left(-J - 3t + 5U + 50W + \left(\cos(\theta_5) + \sqrt{3}\sin(\theta_5)\right)\sqrt{A_6}\right)$$

$$\begin{aligned}
|\Psi_{199}\rangle &= |5, \frac{1}{2}, \frac{1}{2}, \Gamma_{4,1}\rangle \\
&= C_{199,1}\left(|022u\rangle + |02u2\rangle + |202u\rangle + |20u2\rangle - |2u02\rangle - |2u20\rangle - |u202\rangle - |u220\rangle\right) \\
&+ C_{199,2}\left(|0u22\rangle - |220u\rangle - |22u0\rangle + |u022\rangle\right) \\
&+ C_{199,3}\left(|2udu\rangle - |2uud\rangle - |du2u\rangle - |duu2\rangle + |u2du\rangle - |u2ud\rangle + |ud2u\rangle + |udu2\rangle\right)
\end{aligned}$$

$$C_{199-1} = \frac{t(J + 4t + U)}{2\sqrt{2}} + \left(\frac{t\left(U - 2W - \left(\cos(\theta_5) + \sqrt{3}\sin(\theta_5)\right)\sqrt{A_6}\right)}{2\sqrt{2}}\right)$$

$$C_{199-2} = \frac{t(-J + 12t - U)}{3\sqrt{2}} + \left(\frac{t\left(-U + 2W + \left(\cos(\theta_5) + \sqrt{3}\sin(\theta_5)\right)\sqrt{A_6}\right)}{3\sqrt{2}}\right)$$

$$C_{199-3} = \frac{15t^2 - (11U + 98W)t + 8U(U + 21W) + J(t - 4(U + 8W))}{6\sqrt{2}} + \left(\frac{-A_{24}^2 + 24W(21U + 104W) - 3(t - 4(U + 8W))\left(\cos(\theta_5) + \sqrt{3}\sin(\theta_5)\right)\sqrt{A_6}}{18\sqrt{2}}\right)$$

$$N_{199} = 2\sqrt{2C_{199,1}^2 + C_{199,2}^2 + 2C_{199,3}^2}$$