64^{th} Eigenvector

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

Irred. Representation : $\boldsymbol{\Gamma_{5,3}}$

$$E_{64} = \frac{1}{2}\left(-J - 2t + U + 10W + \sqrt{A_7}\right)$$

$$\begin{aligned}
|\Psi_{64}\rangle &= |3, \frac{1}{2}, -\frac{1}{2}, \Gamma_{5,3}\rangle \\
&= C_{64,1}\left(|002d\rangle - |00d2\rangle - |020d\rangle + |0d02\rangle + |20d0\rangle - |2d00\rangle - |d020\rangle + |d200\rangle\right) \\
&+ C_{64,2}\left(|0ddu\rangle + |d0ud\rangle - |du0d\rangle - |udd0\rangle\right) \\
&+ C_{64,3}\left(|0dud\rangle + |0udd\rangle + |d0du\rangle - |dd0u\rangle - |ddu0\rangle - |dud0\rangle + |u0dd\rangle - |ud0d\rangle\right)
\end{aligned}$$

$$\begin{aligned}
C_{64-1} &= -\frac{1}{2}\sqrt{\frac{3}{2}}t \\
C_{64-2} &= -\frac{J + 2t + U - 2W - \sqrt{A_7}}{2\sqrt{6}} \\
C_{64-3} &= \frac{J + 2t + U - 2W - \sqrt{A_7}}{4\sqrt{6}} \\
N_{64} &= 2\sqrt{2C_{64,1}^2 + C_{64,2}^2 + 2C_{64,3}^2}
\end{aligned}$$