69th **Eigenvector**

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

Irred. Representation : $\Gamma_{3,1}$

$$E_{69} = \frac{1}{2}\left(-J - 2t + U + 10W + \sqrt{A_4}\right)$$

$$
\begin{aligned}
|\Psi_{69}\rangle &= |3, \tfrac{1}{2}, \tfrac{1}{2}, \Gamma_{3,1}\rangle \\
&= C_{69,1}\left(|002u\rangle + |00u2\rangle + |02u0\rangle + |0u20\rangle + |200u\rangle + |2u00\rangle + |u002\rangle + |u200\rangle\right) \\
&+ C_{69,2}\left(|020u\rangle + |0u02\rangle + |20u0\rangle + |u020\rangle\right) \\
&+ C_{69,3}\left(|0duu\rangle - |0uud\rangle - |d0uu\rangle + |duu0\rangle + |u0du\rangle - |ud0u\rangle + |uu0d\rangle - |uud0\rangle\right)
\end{aligned}
$$

$$
\begin{aligned}
C_{69-1} &= -\frac{t}{2\sqrt{2}} \\
C_{69-2} &= \frac{t}{\sqrt{2}} \\
C_{69-3} &= \frac{J - 2t + U - 2W - \sqrt{A_4}}{4\sqrt{2}} \\
N_{69} &= 2\sqrt{2C_{69,1}^2 + C_{69,2}^2 + 2C_{69,3}^2}
\end{aligned}
$$