119$^{\text{th}}$ **Eigenvector**

$$N_e = 4 \qquad s = 0 \qquad m_s = 0$$

Irred. Representation : $\boldsymbol{\Gamma_{3,2}}$

$$E_{119} = -J + U + 10W - \frac{2\cos(\theta_1)\sqrt{A_1}}{\sqrt{3}}$$

$$
\begin{aligned}
|\Psi_{119}\rangle &= |4,0,0,\Gamma_{3,2}\rangle \\
&= C_{119,1}\left(|0022\rangle - |0220\rangle - |2002\rangle + |2200\rangle\right) \\
&+ C_{119,2}\left(|02du\rangle - |02ud\rangle - |0du2\rangle + |0ud2\rangle + |20du\rangle - |20ud\rangle - |2du0\rangle + |2ud0\rangle \right. \\
&\qquad\qquad \left. - |d02u\rangle - |d20u\rangle + |du02\rangle + |du20\rangle + |u02d\rangle + |u20d\rangle - |ud02\rangle - |ud20\rangle\right) \\
&+ C_{119,3}\left(|dduu\rangle + |duud\rangle + |uddu\rangle + |uudd\rangle\right) \\
&+ C_{119,4}\left(|dudu\rangle + |udud\rangle\right)
\end{aligned}
$$

$$
\begin{aligned}
C_{119-1} &= t(J + U - 2W) - \frac{2t\cos(\theta_1)\sqrt{A_1}}{\sqrt{3}} \\
C_{119-2} &= \frac{1}{12}\left(4\cos^2(\theta_1)A_1 - 3(J + U - 2W)^2\right) \\
C_{119-3} &= -\frac{1}{3}t\left(3(J + U - 2W) + 2\sqrt{3}\cos(\theta_1)\sqrt{A_1}\right) \\
C_{119-4} &= \frac{2}{3}t\left(3(J + U - 2W) + 2\sqrt{3}\cos(\theta_1)\sqrt{A_1}\right) \\
N_{119} &= \sqrt{4C_{119,1}^2 + 16C_{119,2}^2 + 4C_{119,3}^2 + 2C_{119,4}^2}
\end{aligned}
$$