142^{nd} Eigenvector

$\boldsymbol{N_e = 4 \qquad s = 1 \qquad m_s = 0}$

Irred. Representation : $\boldsymbol{\Gamma_{5,2}}$

$$E_{142} = \frac{A_{15}}{3}$$

$$\begin{aligned}
|\Psi_{142}\rangle &= |4,1,0,\Gamma_{5,2}\rangle \\
&= C_{142,1}\left(|02du\rangle + |02ud\rangle - |20du\rangle - |20ud\rangle - |du02\rangle + |du20\rangle - |ud02\rangle + |ud20\rangle\right) \\
&+ C_{142,2}\left(|0d2u\rangle - |0du2\rangle + |0u2d\rangle - |0ud2\rangle + |2d0u\rangle - |2du0\rangle + |2u0d\rangle - |2ud0\rangle\right. \\
&\qquad \left. - |d02u\rangle + |d0u2\rangle - |d20u\rangle + |d2u0\rangle - |u02d\rangle + |u0d2\rangle - |u20d\rangle + |u2d0\rangle\right) \\
&+ C_{142,3}\left(|dduu\rangle - |uudd\rangle\right)
\end{aligned}$$

$$\begin{aligned}
C_{142-1} &= 2\sqrt{2}t^2 \\
C_{142-2} &= \frac{t(J+U)}{3\sqrt{2}} \\
&+ \left(\frac{t\left(U - 2W + \left(\sqrt{3}\sin(\theta_3) - \cos(\theta_3)\right)\sqrt{A_2}\right)}{3\sqrt{2}}\right) \\
C_{142-3} &= -\frac{-8t^2 + (U+10W)^2 + \frac{A_{15}^2}{9} - \frac{2}{3}(U+10W)A_{15}}{\sqrt{2}} \\
N_{142} &= \sqrt{8C_{142,1}^2 + 16C_{142,2}^2 + 2C_{142,3}^2}
\end{aligned}$$