38^{th} Eigenvector

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

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

$$E_{38} \;=\; \frac{A_7}{3}$$

$$\begin{aligned}
|\Psi_{38}\rangle &= |3, \frac{1}{2}, \frac{1}{2}, \Gamma_{3,1}\rangle \\
&= C_{38,1}\left(|02u\rangle - |0u2\rangle\right) \\
&+ C_{38,2}\left(|20u\rangle - |2u0\rangle\right) \\
&+ C_{38,3}\left(|duu\rangle\right) \\
&+ C_{38,4}\left(|u02\rangle - |u20\rangle\right) \\
&+ C_{38,5}\left(|udu\rangle + |uud\rangle\right)
\end{aligned}$$

$$\begin{aligned}
C_{38-1} &= \frac{1}{6}t(2J - 9t + 2U) \\
&+ \left(\frac{1}{6}t\left(2(U - W) + \left(\cos(\theta_1) - \sqrt{3}\sin(\theta_1)\right)\sqrt{A_2}\right)\right) \\
C_{38-2} &= \frac{1}{12}\left(18t^2 + 2Ut - 29Wt - 18UW + J(11t + 6(U + 2W))\right) \\
&+ \left(\frac{1}{36}\left(-2A_7^2 + (-6J + 9t + 6U + 30W)A_7 - 54W(U + 2W) + 3t\left(\cos(\theta_1) - \sqrt{3}\sin(\theta_1)\right)\sqrt{A_2}\right.\right. \\
C_{38-3} &= -\frac{1}{3}t(J + 9t + U) \\
&+ \left(-\frac{1}{3}t\left(U - W + \left(\sqrt{3}\sin(\theta_1) - \cos(\theta_1)\right)\sqrt{A_2}\right)\right) \\
C_{38-4} &= \frac{1}{12}\left(36t^2 - 2Ut - 25Wt - 18UW + J(7t + 6(U + 2W))\right) \\
&+ \left(\frac{1}{36}\left(-2A_7^2 + (-6J + 9t + 6U + 30W)A_7 - 54W(U + 2W) + 3t\left(\sqrt{3}\sin(\theta_1) - \cos(\theta_1)\right)\sqrt{A_2}\right.\right. \\
C_{38-5} &= \frac{1}{6}t(J + 9t + U) \\
&+ \left(\frac{1}{6}t\left(U - W + \left(\sqrt{3}\sin(\theta_1) - \cos(\theta_1)\right)\sqrt{A_2}\right)\right) \\
N_{38} &= \sqrt{2C_{38,1}^2 + 2C_{38,2}^2 + C_{38,3}^2 + 2C_{38,4}^2 + 2C_{38,5}^2}
\end{aligned}$$