$$
\begin{aligned}
\Psi_{109} &= C_1 \left(|0u2u\rangle + |2u0u\rangle - i\,|u0u2\rangle - i\,|u2u0\rangle \right) \\
&\quad + C_2 \left(-|02uu\rangle - i\,|0uu2\rangle + |20uu\rangle + i\,|2uu0\rangle + i\,|u02u\rangle - i\,|u20u\rangle + |uu02\rangle - |uu20\rangle \right)
\end{aligned}
$$

$$
C_1 = -\left(\frac{1}{4}\right) + \frac{i}{4}
$$

$$
C_2 = -\left(\frac{1}{4}\right)
$$