$$
\begin{aligned}
\Psi_{199} &= C_1\left(|2ddu\rangle + i\,|ddu2\rangle - |du2d\rangle - i\,|u2dd\rangle\right) \\
&\quad + C_2\left(|2dud\rangle - i\,|d2du\rangle + i\,|dud2\rangle - |ud2d\rangle\right) \\
&\quad + C_3\left(|2udd\rangle - i\,|d2ud\rangle - |dd2u\rangle + i\,|udd2\rangle\right) \\
&\quad + C_4\left(-|0d22\rangle + i\,|20d2\rangle + |220d\rangle - i\,|d220\rangle\right) \\
&\quad + C_5\left(-i\,|022d\rangle + |22d0\rangle + i\,|2d02\rangle - |d022\rangle\right) \\
&\quad + C_6\left(-i\,|02d2\rangle - |202d\rangle + |2d20\rangle + i\,|d202\rangle\right)
\end{aligned}
$$

$$
C_1 = \frac{\frac{i}{3}\sqrt{2}\left(\sqrt{64\,t^4+3\,t^2\,U^2}\left(-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)+2\,t^2\left(2\,U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)\right)}{t\left(-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)\left(4\,i\,t-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}
$$

$$
C_2 = \frac{3-\frac{2\,i\left(\sqrt{64\,t^4+3\,t^2\,U^2}\left(-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)+2\,t^2\left(2\,U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)\right)}{t\left(-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)\left(4\,i\,t-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}}{6\sqrt{2}}
$$

$$
C_3 = \frac{-3-\frac{2\,i\left(\sqrt{64\,t^4+3\,t^2\,U^2}\left(-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)+2\,t^2\left(2\,U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)\right)}{t\left(-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)\left(4\,i\,t-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}}{6\sqrt{2}}
$$

$$
C_4 = \frac{2\sqrt{2}\,t\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}}{\left(U-\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)\left(4\,i\,t-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}
$$

$$
C_5 = \frac{\sqrt{2}\left(-8\,t^2-i\,t\,U+\sqrt{64\,t^4+3\,t^2\,U^2}\right)}{\left(-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)\left(4\,i\,t-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}
$$

$$
C_6 = \frac{\sqrt{2}\left(8\,i\,t^2-t\,U-i\sqrt{64\,t^4+3\,t^2\,U^2}+2\,t\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}{\left(-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)\left(4\,i\,t-U+\sqrt{32\,t^2+U^2-4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}
$$