$$K_{135}^{2} = \begin{bmatrix}
\frac{-35\,U}{12\,t} & \frac{-32\,t^2+(5-7\,\mathbf{i}\,\sqrt{3})\,U^2}{24\,t^2} & \frac{3\,\mathbf{i}+\sqrt{3}}{2} & \frac{(-9\,\mathbf{i}+7\,\sqrt{3})\,U}{8\,t} & \frac{(3-7\,\mathbf{i}\,\sqrt{3})\,U}{6\,t} & \frac{-((-\mathbf{i}+\sqrt{3})\,U^2)}{4\,t^2} & \frac{3\,(1+\mathbf{i}\,\sqrt{3})}{2} & \frac{(-7+3\,\mathbf{i}\,\sqrt{3})\,U}{8\,t} & \frac{(17+\mathbf{i}\,\sqrt{3})\,U}{6\,\sqrt{2}\,t} & \frac{-4\,t^2+(1+\mathbf{i}\,\sqrt{3})\,U^2}{3\,\sqrt{2}\,t^2} & \frac{(-5\,\mathbf{i}+2\,\sqrt{3})\,U}{4\,t} & \frac{16\,\sqrt{3}\,t^2+(3\,\mathbf{i}+\sqrt{3})\,U^2}{24\,t^2} \\
\frac{-32\,t^2+(5+7\,\mathbf{i}\,\sqrt{3})\,U^2}{24\,t^2} & \frac{-11\,U}{4\,t} & \frac{(9\,\mathbf{i}-4\,\sqrt{3})\,U}{12\,t} & \mathbf{i}+\frac{1}{\sqrt{3}} & 0 & \frac{(-3\,\mathbf{i}+\sqrt{3})\,U}{3\,t} & \frac{U}{4\,t} & -1-\mathbf{i}\,\sqrt{3} & \frac{8\,\mathbf{i}\,(\mathbf{i}+\sqrt{3})\,t^2+(-1-\mathbf{i}\,\sqrt{3})\,U^2}{6\,\sqrt{2}\,t^2} & \frac{-\frac{\mathbf{i}}{2}\,(-\mathbf{i}+\sqrt{3})\,U}{\sqrt{2}\,t} & \frac{-(32\,\sqrt{3}\,t^2+3\,(-3\,\mathbf{i}+\sqrt{3})\,U^2)}{24\,t^2} & \frac{-((6\,\mathbf{i}+5\,\sqrt{3})\,U)}{12\,t} \\
\frac{-3\,\mathbf{i}+\sqrt{3}}{2} & \frac{-((9\,\mathbf{i}+4\,\sqrt{3})\,U)}{12\,t} & \frac{-15\,U}{4\,t} & \frac{-24\,t^2+(3+\mathbf{i}\,\sqrt{3})\,U^2}{8\,t^2} & 0 & \frac{-3\,U}{2\,t} & \frac{3\,\mathbf{i}}{4}\,\frac{U}{t} & \frac{-(8\,\sqrt{3}\,t^2+(-3\,\mathbf{i}+\sqrt{3})\,U^2)}{8\,t^2} & 0 & -\left(\frac{U}{\sqrt{6}\,t}\right) & \frac{\mathbf{i}}{2}\,(\mathbf{i}+\sqrt{3}) & \frac{\frac{-3\,\mathbf{i}}{4}\,\sqrt{3}\,U}{t} \\
\frac{(9\,\mathbf{i}+7\,\sqrt{3})\,U}{8\,t} & -\mathbf{i}+\frac{1}{\sqrt{3}} & \frac{-24\,t^2+(3-\mathbf{i}\,\sqrt{3})\,U^2}{8\,t^2} & \frac{-9\,U}{4\,t} & 0 & 0 & \frac{8\,\sqrt{3}\,t^2-(3\,\mathbf{i}+\sqrt{3})\,U^2}{8\,t^2} & \frac{\sqrt{3}\,U}{4\,t} & \frac{(-3\,\mathbf{i}+\sqrt{3})\,U}{2\,\sqrt{2}\,t} & \frac{-(\sqrt{2}\,(-3\,\mathbf{i}+\sqrt{3}))}{3} & \frac{3\,(U+\mathbf{i}\,\sqrt{3}\,U)}{8\,t} & 0 \\
\frac{(3+7\,\mathbf{i}\,\sqrt{3})\,U}{6\,t} & 0 & 0 & 0 & \frac{-5\,U}{t} & 2\,(\mathbf{i}+\sqrt{3}) & 0 & 0 & \frac{(3-4\,\mathbf{i}\,\sqrt{3})\,U}{3\,\sqrt{2}\,t} & 0 & \frac{-((-\mathbf{i}+\sqrt{3})\,U)}{2\,t} & 0 \\
\frac{-((\mathbf{i}+\sqrt{3})\,U^2)}{4\,t^2} & \frac{(3\,\mathbf{i}+\sqrt{3})\,U}{3\,t} & \frac{-3\,U}{2\,t} & 0 & 2\,(-\mathbf{i}+\sqrt{3}) & \frac{-5\,U}{t} & \frac{\sqrt{3}\,U}{2\,t} & 0 & \frac{-((-\mathbf{i}+\sqrt{3})\,U^2)}{2\,\sqrt{2}\,t^2} & \frac{(-3\,\mathbf{i}+5\,\sqrt{3})\,U}{6\,\sqrt{2}\,t} & \frac{\frac{-\mathbf{i}}{4}\,(-3\,\mathbf{i}+\sqrt{3})\,U^2}{t^2} & \frac{\frac{\mathbf{i}}{2}\,(\mathbf{i}+\sqrt{3})\,U}{t} \\
\frac{3\,(1-\mathbf{i}\,\sqrt{3})}{2} & \frac{U}{4\,t} & \frac{\frac{-3\,\mathbf{i}}{4}\,U}{t} & \frac{8\,\sqrt{3}\,t^2-(-3\,\mathbf{i}+\sqrt{3})\,U^2}{8\,t^2} & 0 & \frac{\sqrt{3}\,U}{2\,t} & \frac{-15\,U}{4\,t} & \frac{8\,t^2+U^2+3\,\mathbf{i}\,\sqrt{3}\,U^2}{8\,t^2} & 0 & \frac{U}{\sqrt{2}\,t} & \frac{3\,\mathbf{i}-\sqrt{3}}{2} & \frac{-3\,\sqrt{3}\,U}{4\,t} \\
\frac{(-7-3\,\mathbf{i}\,\sqrt{3})\,U}{8\,t} & -1+\mathbf{i}\,\sqrt{3} & \frac{-(8\,\sqrt{3}\,t^2+(3\,\mathbf{i}+\sqrt{3})\,U^2)}{8\,t^2} & \frac{\sqrt{3}\,U}{4\,t} & 0 & 0 & \frac{8\,t^2+U^2-3\,\mathbf{i}\,\sqrt{3}\,U^2}{8\,t^2} & \frac{-15\,U}{4\,t} & \frac{\frac{\mathbf{i}}{2}\,(\mathbf{i}+\sqrt{3})\,U}{\sqrt{2}\,t} & \sqrt{2}-\mathbf{i}\,\sqrt{6} & \frac{-((3\,\mathbf{i}+\sqrt{3})\,U)}{8\,t} & 0 \\
\frac{(17-\mathbf{i}\,\sqrt{3})\,U}{6\,\sqrt{2}\,t} & \frac{(-8-8\,\mathbf{i}\,\sqrt{3})\,t^2+\mathbf{i}\,(\mathbf{i}+\sqrt{3})\,U^2}{6\,\sqrt{2}\,t^2} & 0 & \frac{(3\,\mathbf{i}+\sqrt{3})\,U}{2\,\sqrt{2}\,t} & \frac{(3+4\,\mathbf{i}\,\sqrt{3})\,U}{3\,\sqrt{2}\,t} & \frac{-((\mathbf{i}+\sqrt{3})\,U^2)}{2\,\sqrt{2}\,t^2} & 0 & \frac{\frac{-\mathbf{i}}{2}\,(-\mathbf{i}+\sqrt{3})\,U}{\sqrt{2}\,t} & \frac{-23\,U}{6\,t} & \frac{(-8-8\,\mathbf{i}\,\sqrt{3})\,t^2+\mathbf{i}\,(7\,\mathbf{i}+\sqrt{3})\,U^2}{12\,t^2} & \frac{-((\mathbf{i}+\sqrt{3})\,U)}{2\,\sqrt{2}\,t} & \frac{-8\,(3\,\mathbf{i}+\sqrt{3})\,t^2+(-3\,\mathbf{i}+\sqrt{3})\,U^2}{6\,\sqrt{2}\,t^2} \\
\frac{-4\,t^2+(1-\mathbf{i}\,\sqrt{3})\,U^2}{3\,\sqrt{2}\,t^2} & \frac{\frac{\mathbf{i}}{2}\,(\mathbf{i}+\sqrt{3})\,U}{\sqrt{2}\,t} & -\left(\frac{U}{\sqrt{6}\,t}\right) & \frac{-(\sqrt{2}\,(3\,\mathbf{i}+\sqrt{3}))}{3} & 0 & \frac{(3\,\mathbf{i}+5\,\sqrt{3})\,U}{6\,\sqrt{2}\,t} & \frac{U}{\sqrt{2}\,t} & \sqrt{2}+\mathbf{i}\,\sqrt{6} & \frac{8\,\mathbf{i}\,(\mathbf{i}+\sqrt{3})\,t^2+(-7-\mathbf{i}\,\sqrt{3})\,U^2}{12\,t^2} & \frac{-5\,U}{2\,t} & -2\,\sqrt{\frac{2}{3}} & \frac{(-3\,\mathbf{i}+5\,\sqrt{3})\,U}{6\,\sqrt{2}\,t} \\
\frac{(5\,\mathbf{i}+2\,\sqrt{3})\,U}{4\,t} & \frac{-(32\,\sqrt{3}\,t^2+3\,(3\,\mathbf{i}+\sqrt{3})\,U^2)}{24\,t^2} & \frac{-\mathbf{i}}{2}\,(-\mathbf{i}+\sqrt{3}) & \frac{3\,(U-\mathbf{i}\,\sqrt{3}\,U)}{8\,t} & \frac{-((\mathbf{i}+\sqrt{3})\,U)}{2\,t} & \frac{\mathbf{i}}{4}\,\frac{(3\,\mathbf{i}+\sqrt{3})\,U^2}{t^2} & \frac{-3\,\mathbf{i}-\sqrt{3}}{2} & \frac{-((-3\,\mathbf{i}+\sqrt{3})\,U)}{8\,t} & \frac{-((-\mathbf{i}+\sqrt{3})\,U)}{2\,\sqrt{2}\,t} & -2\,\sqrt{\frac{2}{3}} & \frac{-21\,U}{4\,t} & \frac{16\,t^2+U^2-3\,\mathbf{i}\,\sqrt{3}\,U^2}{8\,t^2} \\
\frac{16\,\sqrt{3}\,t^2+(-3\,\mathbf{i}+\sqrt{3})\,U^2}{24\,t^2} & \frac{(6\,\mathbf{i}-5\,\sqrt{3})\,U}{12\,t} & \frac{\frac{3\,\mathbf{i}}{4}\,\sqrt{3}\,U}{t} & 0 & 0 & \frac{-(U+\mathbf{i}\,\sqrt{3}\,U)}{2\,t} & \frac{-3\,\sqrt{3}\,U}{4\,t} & 0 & \frac{-8\,(-3\,\mathbf{i}+\sqrt{3})\,t^2+(3\,\mathbf{i}+\sqrt{3})\,U^2}{6\,\sqrt{2}\,t^2} & \frac{(3\,\mathbf{i}+5\,\sqrt{3})\,U}{6\,\sqrt{2}\,t} & \frac{16\,t^2+U^2+3\,\mathbf{i}\,\sqrt{3}\,U^2}{8\,t^2} & \frac{-17\,U}{4\,t}
\end{bmatrix}$$