$$
K^2_{102} \quad = \quad
\begin{bmatrix}
\frac{-21\,U}{4\,t} & \frac{-\mathbf{i}}{4}\frac{\sqrt{3}\,U^2}{t^2} & \frac{-\mathbf{i}}{4}\frac{(-3\,\mathbf{i}+\sqrt{3})\,U^2}{\sqrt{2}\,t^2} & 0 & 0 & \frac{3\,(\mathbf{i}+\sqrt{3})\,U}{2\sqrt{2}\,t} & 0 & \frac{(-3\,\mathbf{i}+\sqrt{3})\,U}{4\sqrt{2}\,t} & 0 & 0 & 0 & \frac{3\,(\mathbf{i}+\sqrt{3})\,U}{4\sqrt{2}\,t} & -\left(\frac{\sqrt{3}\,U}{t}\right) & \frac{-3}{4}\frac{\mathbf{i}}{t^2}U^2 & \frac{-3\,(\mathbf{i}+\sqrt{3})\,U^2}{4\sqrt{2}\,t^2} & \frac{3}{4}\frac{\mathbf{i}}{t}U \\
\frac{\mathbf{i}}{4}\frac{\sqrt{3}\,U^2}{t^2} & \frac{-21\,U}{4\,t} & \frac{3\,(1-\mathbf{i}\,\sqrt{3})\,U}{4\sqrt{2}\,t} & 0 & 0 & 0 & \frac{\sqrt{3}}{2}\frac{U}{t} & 0 & \frac{-((3\,\mathbf{i}+\sqrt{3})\,U)}{4\sqrt{2}\,t} & 0 & -\left(\frac{\sqrt{3}}{2}U\right) & 0 & 0 & \frac{-7\,\sqrt{3}\,U}{4\,t} & \frac{-((-3\,\mathbf{i}+\sqrt{3})\,U)}{4\sqrt{2}\,t} & \frac{\sqrt{3}\,U^2}{4\,t^2} \\
\frac{\mathbf{i}}{4}\frac{(3\,\mathbf{i}+\sqrt{3})\,U^2}{\sqrt{2}\,t^2} & \frac{3\,(1+\mathbf{i}\,\sqrt{3})\,U}{4\sqrt{2}\,t} & \frac{-6\,U}{t} & 0 & 0 & 0 & 0 & 0 & 0 & -\left(\frac{-3\,\mathbf{i}+\sqrt{3}}{\sqrt{2}}\right) & 0 & 0 & \frac{-3\,(-\mathbf{i}+\sqrt{3})}{\sqrt{2}} & \frac{-((3\,\mathbf{i}+\sqrt{3})\,U)}{4\sqrt{2}\,t} & -\left(\frac{\sqrt{3}\,U}{t}\right) & \frac{-((3\,\mathbf{i}+\sqrt{3})\,U^2)}{4\sqrt{2}\,t^2} \\
0 & 0 & 0 & \frac{-4\,U}{t} & \frac{(1-\mathbf{i}\,\sqrt{3})\,U}{\sqrt{2}\,t} & 0 & \frac{\sqrt{2}\,U+\mathbf{i}\,\sqrt{6}\,U}{4\,t} & 0 & \frac{\mathbf{i}\,(2\,\mathbf{i}+\sqrt{3})\,U}{\sqrt{2}\,t} & 0 & \frac{(2+\mathbf{i}\,\sqrt{3})\,U}{\sqrt{2}\,t} & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & \frac{(1+\mathbf{i}\,\sqrt{3})\,U}{\sqrt{2}\,t} & \frac{-7\,U}{t} & 0 & 0 & 0 & -\left(\frac{U}{t}\right) & 2\sqrt{2} & \frac{\mathbf{i}}{2}\frac{(\mathbf{i}+\sqrt{3})\,U}{t} & 0 & \sqrt{2}\,(3+\mathbf{i}\,\sqrt{3}) & 0 & 0 & 0 \\
\frac{3\,(-\mathbf{i}+\sqrt{3})\,U}{2\sqrt{2}\,t} & 0 & 0 & 0 & 0 & \frac{-11\,U}{2\,t} & \frac{\frac{-\mathbf{i}}{4}\,(-\mathbf{i}+\sqrt{3})\,U^2}{t^2} & 0 & -2 & \frac{\frac{\mathbf{i}}{2}\,(\mathbf{i}+\sqrt{3})\,U}{\sqrt{2}\,t} & 2 & \frac{U}{t} & 0 & \sqrt{2}+\mathbf{i}\,\sqrt{6} & 0 & \frac{\sqrt{2}\,U+\mathbf{i}\,\sqrt{6}\,U}{4\,t} \\
0 & \frac{\sqrt{\frac{3}{2}}\,U}{2\,t} & 0 & \frac{\sqrt{2}\,U-\mathbf{i}\,\sqrt{6}\,U}{4\,t} & 0 & \frac{\mathbf{i}}{4}\frac{(\mathbf{i}+\sqrt{3})\,U^2}{t^2} & \frac{-5\,U}{t} & 0 & \frac{(-1+3\,\mathbf{i}\,\sqrt{3})\,U}{4\,t} & 0 & \frac{(2-\mathbf{i}\,\sqrt{3})\,U}{2\,t} & 0 & 0 & \frac{3\,U}{2\sqrt{2}\,t} & \frac{U-\mathbf{i}\,\sqrt{3}\,U}{t} & 0 \\
\frac{(3\,\mathbf{i}+\sqrt{3})\,U}{4\sqrt{2}\,t} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{-6\,U}{t} & \frac{(1+\mathbf{i}\,\sqrt{3})\,U^2}{4\,t^2} & \frac{(3+\mathbf{i}\,\sqrt{3})\,U}{\sqrt{2}\,t} & \frac{(1-\mathbf{i}\,\sqrt{3})\,U^2}{4\,t^2} & \frac{\mathbf{i}}{2}\frac{\sqrt{3}\,U}{t} & 0 & 0 & 0 & \frac{(3-\mathbf{i}\,\sqrt{3})\,U}{4\sqrt{2}\,t} \\
0 & \frac{-((-3\,\mathbf{i}+\sqrt{3})\,U)}{4\sqrt{2}\,t} & 0 & \frac{(-2-\mathbf{i}\,\sqrt{3})\,U}{\sqrt{2}\,t} & -\left(\frac{U}{t}\right) & -2 & \frac{-(U+3\,\mathbf{i}\,\sqrt{3}\,U)}{4\,t} & \frac{(1-\mathbf{i}\,\sqrt{3})\,U^2}{4\,t^2} & \frac{-5\,U}{t} & -\left(\frac{U^2}{\sqrt{2}\,t^2}\right) & \frac{(-1+5\,\mathbf{i}\,\sqrt{3})\,U}{4\,t} & \frac{8\,t^2+U^2+\mathbf{i}\,\sqrt{3}\,U^2}{4\,t^2} & \frac{U^2}{\sqrt{2}\,t^2} & \frac{3}{4}\frac{\mathbf{i}}{\sqrt{2}\,t}(\mathbf{i}+\sqrt{3})\,U & -\left(\frac{U}{t}\right) & \sqrt{2}+\mathbf{i}\,\sqrt{6} \\
0 & 0 & -\left(\frac{3\,\mathbf{i}+\sqrt{3}}{\sqrt{2}}\right) & 0 & 2\sqrt{2} & \frac{\frac{-\mathbf{i}}{2}\,(-\mathbf{i}+\sqrt{3})\,U}{\sqrt{2}\,t} & 0 & \frac{(3-\mathbf{i}\,\sqrt{3})\,U}{\sqrt{2}\,t} & -\left(\frac{U^2}{\sqrt{2}\,t^2}\right) & \frac{-4\,U}{t} & \frac{\mathbf{i}}{2}\frac{(\mathbf{i}+\sqrt{3})\,U^2}{\sqrt{2}\,t^2} & 0 & 0 & 0 & \frac{1+\mathbf{i}\,\sqrt{3}}{\sqrt{2}} & 0 \\
0 & \frac{-\left(\frac{\sqrt{\frac{3}{2}}\,U}{2\,t}\right)}{} & 0 & \frac{(2-\mathbf{i}\,\sqrt{3})\,U}{\sqrt{2}\,t} & \frac{-(U+\mathbf{i}\,\sqrt{3}\,U)}{2\,t} & 2 & \frac{(2+\mathbf{i}\,\sqrt{3})\,U}{2\,t} & \frac{(1+\mathbf{i}\,\sqrt{3})\,U^2}{4\,t^2} & \frac{-(U+5\,\mathbf{i}\,\sqrt{3}\,U)}{4\,t} & \frac{\frac{-\mathbf{i}}{2}\,(-\mathbf{i}+\sqrt{3})\,U^2}{\sqrt{2}\,t^2} & \frac{-5\,U}{t} & \frac{-(8\,t^2+U^2-\mathbf{i}\,\sqrt{3}\,U^2)}{4\,t^2} & \frac{\mathbf{i}}{2}\frac{(\mathbf{i}+\sqrt{3})\,U^2}{\sqrt{2}\,t^2} & \frac{-3\,U}{2\sqrt{2}\,t} & \frac{U}{t} & -\sqrt{2}-\mathbf{i}\,\sqrt{6} \\
\frac{3\,(-\mathbf{i}+\sqrt{3})\,U}{4\sqrt{2}\,t} & 0 & 0 & 0 & 0 & \frac{U}{t} & 0 & \frac{\frac{-\mathbf{i}}{2}\,\sqrt{3}\,U}{t} & \frac{8\,t^2+U^2-\mathbf{i}\,\sqrt{3}\,U^2}{4\,t^2} & 0 & \frac{-(8\,t^2+U^2+\mathbf{i}\,\sqrt{3}\,U^2)}{4\,t^2} & \frac{-7\,U}{t} & \frac{3}{2}\frac{\mathbf{i}}{\sqrt{2}\,t}(3\,\mathbf{i}+\sqrt{3})\,U & -\sqrt{2}-\mathbf{i}\,\sqrt{6} & 0 & \frac{\sqrt{2}\,U+\mathbf{i}\,\sqrt{6}\,U}{8\,t} \\
-\left(\frac{\sqrt{3}\,U}{t}\right) & 0 & \frac{-3\,(\mathbf{i}+\sqrt{3})}{\sqrt{2}} & 0 & \sqrt{2}\,(3-\mathbf{i}\,\sqrt{3}) & 0 & 0 & 0 & \frac{U^2}{\sqrt{2}\,t^2} & 0 & \frac{\frac{-\mathbf{i}}{2}\,(-\mathbf{i}+\sqrt{3})\,U^2}{\sqrt{2}\,t^2} & \frac{\frac{-3\,\mathbf{i}}{2}\,(-3\,\mathbf{i}+\sqrt{3})\,U}{\sqrt{2}\,t} & \frac{-6\,U}{t} & 0 & \frac{3+\mathbf{i}\,\sqrt{3}}{\sqrt{2}} & 0 \\
\frac{3}{4}\frac{\mathbf{i}}{t^2}U^2 & \frac{-7\,\sqrt{3}\,U}{4\,t} & \frac{-((-3\,\mathbf{i}+\sqrt{3})\,U)}{4\sqrt{2}\,t} & 0 & 0 & \sqrt{2}-\mathbf{i}\,\sqrt{6} & \frac{3\,U}{2\sqrt{2}\,t} & 0 & \frac{\frac{-3}{4}\,(-\mathbf{i}+\sqrt{3})\,U}{\sqrt{2}\,t} & 0 & \frac{-3\,U}{2\sqrt{2}\,t} & \mathbf{i}\,\sqrt{2}\,(\mathbf{i}+\sqrt{3}) & 0 & \frac{-27\,U}{4\,t} & \frac{5\,(1-\mathbf{i}\,\sqrt{3})\,U}{4\sqrt{2}\,t} & -4-\frac{U^2}{4\,t^2} \\
\frac{-3\,(-\mathbf{i}+\sqrt{3})\,U^2}{4\sqrt{2}\,t^2} & \frac{-((3\,\mathbf{i}+\sqrt{3})\,U)}{4\sqrt{2}\,t} & -\left(\frac{\sqrt{3}\,U}{t}\right) & 0 & 0 & 0 & \frac{U+\mathbf{i}\,\sqrt{3}\,U}{t} & 0 & -\left(\frac{U}{t}\right) & \frac{1-\mathbf{i}\,\sqrt{3}}{\sqrt{2}} & \frac{U}{t} & 0 & \frac{3-\mathbf{i}\,\sqrt{3}}{\sqrt{2}} & \frac{5\,(1+\mathbf{i}\,\sqrt{3})\,U}{4\sqrt{2}\,t} & \frac{-4\,U}{t} & \frac{(1+\mathbf{i}\,\sqrt{3})\,U^2}{4\sqrt{2}\,t^2} \\
\frac{-\frac{3}{4}\,\mathbf{i}}{t}U & \frac{\sqrt{3}\,U^2}{4\,t^2} & \frac{-((-3\,\mathbf{i}+\sqrt{3})\,U^2)}{4\sqrt{2}\,t^2} & 0 & 0 & \frac{\sqrt{2}\,U-\mathbf{i}\,\sqrt{6}\,U}{4\,t} & 0 & \frac{(3+\mathbf{i}\,\sqrt{3})\,U}{4\sqrt{2}\,t} & \sqrt{2}-\mathbf{i}\,\sqrt{6} & 0 & \mathbf{i}\,\sqrt{2}\,(\mathbf{i}+\sqrt{3}) & \frac{\sqrt{2}\,U-\mathbf{i}\,\sqrt{6}\,U}{8\,t} & 0 & -4-\frac{U^2}{4\,t^2} & \frac{(1-\mathbf{i}\,\sqrt{3})\,U^2}{4\sqrt{2}\,t^2} & \frac{-21\,U}{4\,t}
\end{bmatrix}
$$