$$K_{112}^{2} = \begin{bmatrix}
\frac{-3\,U}{t} & \frac{\left(1+\mathbf{i}\,\sqrt{3}\right)\left(4\,t^{2}-U^{2}\right)}{4\,t^{2}} & 0 & 0 & \frac{\left(-3\,\mathbf{i}+\sqrt{3}\right)U}{2\,\sqrt{2}\,t} & -\left(\frac{3\,\mathbf{i}+\sqrt{3}}{\sqrt{2}}\right) & \frac{3\,\mathbf{i}\,U}{\sqrt{2}\,t} & 0 & -\left(\frac{3\,\mathbf{i}+\sqrt{3}}{\sqrt{2}}\right) & \frac{\left(3\,\mathbf{i}+\sqrt{3}\right)U}{2\,\sqrt{2}\,t} & \frac{\sqrt{3}\,U}{2\,t} & 0 \\
\frac{\left(1-\mathbf{i}\,\sqrt{3}\right)\left(4\,t^{2}-U^{2}\right)}{4\,t^{2}} & \frac{-15\,U}{4\,t} & 0 & \frac{\frac{3}{2}\,\mathbf{i}\,U}{\sqrt{2}\,t} & 0 & \frac{\sqrt{\frac{3}{2}}\,U}{t} & 0 & \frac{\left(3\,\mathbf{i}+\sqrt{3}\right)U}{2\,t} & \frac{-\left(\sqrt{\frac{3}{2}}\,U\right)}{2\,t} & 0 & -3\,\mathbf{i}+\sqrt{3} & \frac{\frac{3}{4}\,\mathbf{i}\,U}{t} \\
0 & 0 & \frac{-5\,U}{t} & 0 & \frac{\frac{-\mathbf{i}}{2}\left(-5\,\mathbf{i}+\sqrt{3}\right)U}{\sqrt{2}\,t} & 0 & \frac{\left(3-\mathbf{i}\,\sqrt{3}\right)U}{2\,\sqrt{2}\,t} & 4 & 0 & \frac{\sqrt{2}\,U-3\,\mathbf{i}\,\sqrt{6}\,U}{4\,t} & 0 & 0 \\
0 & \frac{\frac{-3}{2}\,\mathbf{i}\,U}{\sqrt{2}\,t} & 0 & \frac{-3\,U}{t} & \frac{-U^{2}}{2\,t^{2}} & 0 & -2+2\,\mathbf{i}\,\sqrt{3} & \frac{\left(3-\mathbf{i}\,\sqrt{3}\right)U}{2\,\sqrt{2}\,t} & \frac{\frac{-\mathbf{i}}{2}\,\sqrt{3}\,U}{t} & \frac{\frac{-\mathbf{i}}{4}\left(-\mathbf{i}+\sqrt{3}\right)U^{2}}{t^{2}} & 0 & \frac{-U}{2\,\sqrt{2}\,t} \\
\frac{\left(3\,\mathbf{i}+\sqrt{3}\right)U}{2\,\sqrt{2}\,t} & 0 & \frac{\frac{\mathbf{i}}{2}\left(5\,\mathbf{i}+\sqrt{3}\right)U}{\sqrt{2}\,t} & \frac{-U^{2}}{2\,t^{2}} & \frac{-4\,U}{t} & 1+\mathbf{i}\,\sqrt{3} & \frac{\frac{-\mathbf{i}}{4}\left(-5\,\mathbf{i}+\sqrt{3}\right)U}{t} & 0 & \frac{\left(-4-4\,\mathbf{i}\,\sqrt{3}\right)t^{2}+\left(1-\mathbf{i}\,\sqrt{3}\right)U^{2}}{4\,t^{2}} & \frac{U-5\,\mathbf{i}\,\sqrt{3}\,U}{4\,t} & 0 & \sqrt{2}+\mathbf{i}\,\sqrt{6} \\
-\left(\frac{-3\,\mathbf{i}+\sqrt{3}}{\sqrt{2}}\right) & \frac{\sqrt{\frac{3}{2}}\,U}{t} & 0 & 0 & 1-\mathbf{i}\,\sqrt{3} & \frac{-9\,U}{2\,t} & \frac{\frac{-\mathbf{i}}{4}\left(-3\,\mathbf{i}+\sqrt{3}\right)U^{2}}{t^{2}} & \frac{\left(1+\mathbf{i}\,\sqrt{3}\right)U}{\sqrt{2}\,t} & \frac{U}{t} & 1-\mathbf{i}\,\sqrt{3} & \frac{1-\mathbf{i}\,\sqrt{3}}{\sqrt{2}} & \frac{\mathbf{i}\,\sqrt{\frac{3}{2}}\,U}{t} \\
\frac{-3\,\mathbf{i}\,U}{\sqrt{2}\,t} & 0 & \frac{\left(3+\mathbf{i}\,\sqrt{3}\right)U}{2\,\sqrt{2}\,t} & -2-2\,\mathbf{i}\,\sqrt{3} & \frac{\frac{\mathbf{i}}{4}\left(5\,\mathbf{i}+\sqrt{3}\right)U}{t} & \frac{\frac{\mathbf{i}}{4}\left(3\,\mathbf{i}+\sqrt{3}\right)U^{2}}{t^{2}} & \frac{-4\,U}{t} & \frac{\frac{-\mathbf{i}}{2}\left(-3\,\mathbf{i}+\sqrt{3}\right)U^{2}}{\sqrt{2}\,t^{2}} & 0 & \frac{\left(5+\mathbf{i}\,\sqrt{3}\right)U}{4\,t} & 0 & 0 \\
0 & \frac{\left(-3\,\mathbf{i}+\sqrt{3}\right)U}{2\,t} & 4 & \frac{\left(3+\mathbf{i}\,\sqrt{3}\right)U}{2\,\sqrt{2}\,t} & 0 & \frac{\left(1-\mathbf{i}\,\sqrt{3}\right)U}{\sqrt{2}\,t} & \frac{\frac{\mathbf{i}}{2}\left(3\,\mathbf{i}+\sqrt{3}\right)U^{2}}{\sqrt{2}\,t^{2}} & \frac{-5\,U}{t} & 0 & 0 & 0 & 0 \\
-\left(\frac{-3\,\mathbf{i}+\sqrt{3}}{\sqrt{2}}\right) & \frac{-\left(\sqrt{\frac{3}{2}}\,U\right)}{2\,t} & 0 & \frac{\frac{\mathbf{i}}{2}\,\sqrt{3}\,U}{t} & \frac{4\,\mathbf{i}\left(\mathbf{i}+\sqrt{3}\right)t^{2}+\left(1+\mathbf{i}\,\sqrt{3}\right)U^{2}}{4\,t^{2}} & \frac{U}{t} & 0 & 0 & \frac{-2\,U}{t} & -1+\mathbf{i}\,\sqrt{3}-\frac{U^{2}}{2\,t^{2}} & \frac{1-\mathbf{i}\,\sqrt{3}}{\sqrt{2}} & \frac{\frac{-\mathbf{i}}{2}\,\sqrt{\frac{3}{2}}\,U}{t} \\
\frac{\left(-3\,\mathbf{i}+\sqrt{3}\right)U}{2\,\sqrt{2}\,t} & 0 & \frac{\sqrt{2}\,U+3\,\mathbf{i}\,\sqrt{6}\,U}{4\,t} & \frac{\frac{\mathbf{i}}{4}\left(\mathbf{i}+\sqrt{3}\right)U^{2}}{t^{2}} & \frac{U+5\,\mathbf{i}\,\sqrt{3}\,U}{4\,t} & 1+\mathbf{i}\,\sqrt{3} & \frac{\left(5-\mathbf{i}\,\sqrt{3}\right)U}{4\,t} & 0 & -1-\mathbf{i}\,\sqrt{3}-\frac{U^{2}}{2\,t^{2}} & \frac{-4\,U}{t} & 0 & -\sqrt{2}-\mathbf{i}\,\sqrt{6} \\
\frac{\sqrt{3}\,U}{2\,t} & 3\,\mathbf{i}+\sqrt{3} & 0 & 0 & 0 & \frac{1+\mathbf{i}\,\sqrt{3}}{\sqrt{2}} & 0 & 0 & \frac{1+\mathbf{i}\,\sqrt{3}}{\sqrt{2}} & 0 & \frac{-3\,U}{t} & \frac{\frac{\mathbf{i}}{4}\left(3\,\mathbf{i}+\sqrt{3}\right)U^{2}}{t^{2}} \\
0 & \frac{\frac{-3}{4}\,\mathbf{i}\,U}{t} & 0 & \frac{-U}{2\,\sqrt{2}\,t} & \sqrt{2}-\mathbf{i}\,\sqrt{6} & \frac{-\mathbf{i}\,\sqrt{\frac{3}{2}}\,U}{t} & 0 & 0 & \frac{\mathbf{i}}{2}\,\sqrt{\frac{3}{2}}\,U & \mathbf{i}\,\sqrt{2}\,\left(\mathbf{i}+\sqrt{3}\right) & \frac{\frac{-\mathbf{i}}{4}\left(-3\,\mathbf{i}+\sqrt{3}\right)U^{2}}{t^{2}} & \frac{-15\,U}{4\,t}
\end{bmatrix}$$