$$K_{63}^2 = \begin{bmatrix}
\frac{-3\,U}{t} & \frac{\sqrt{3}\left(-4\,t^2+U^2\right)}{2\,t^2} & \frac{3\,\sqrt{2}\,U}{t} & 0 & 0 & -\sqrt{6} & -\sqrt{6} & \frac{\sqrt{3}\,U}{2\,t} & \frac{\sqrt{\frac{3}{2}}\,U}{t} & 0 & \frac{\sqrt{3}\,U}{t} & 0 \\
\frac{\sqrt{3}\left(-4\,t^2+U^2\right)}{2\,t^2} & \frac{-15\,U}{2\,t} & -\left(\frac{\sqrt{\frac{3}{2}}\,U^2}{t^2}\right) & 0 & 0 & \frac{U}{\sqrt{2}\,t} & -\left(\frac{\sqrt{2}\,U}{t}\right) & 4 & 0 & 0 & 2+\frac{U^2}{2\,t^2} & -\left(\frac{U^2}{\sqrt{2}\,t^2}\right) \\
\frac{3\,\sqrt{2}\,U}{t} & -\left(\frac{\sqrt{\frac{3}{2}}\,U^2}{t^2}\right) & \frac{-6\,U}{t} & 0 & 0 & 0 & 0 & \frac{\sqrt{\frac{3}{2}}\,U}{t} & -\left(\frac{\sqrt{3}\,U}{t}\right) & 2\,\sqrt{6} & 0 & 0 \\
0 & 0 & 0 & \frac{-25\,U}{\left(6+\sqrt{6}\right)\,t} & \frac{\sqrt{\frac{5}{6}}\,U}{t} & 0 & 0 & \frac{-\left(\sqrt{6+\sqrt{6}}\,U\right)}{2\,t} & \frac{\left(\sqrt{2}-3\,\sqrt{3}\right)\,U}{\sqrt{6+\sqrt{6}}\,t} & \frac{-4\,\left(1+\sqrt{6}\right)}{\sqrt{6+\sqrt{6}}} & 0 & 0 \\
0 & 0 & 0 & \frac{\sqrt{\frac{5}{6}}\,U}{t} & \frac{25\,\left(-1+\sqrt{6}\right)\,U}{\left(12-7\,\sqrt{6}\right)\,t} & 0 & 0 & \frac{3\,\left(\sqrt{2}-2\,\sqrt{3}\right)\,U}{2\,\sqrt{18-3\,\sqrt{6}}\,t} & \frac{\left(\sqrt{\frac{2}{6-\sqrt{6}}}+3\,\sqrt{\frac{3}{6-\sqrt{6}}}\right)\,U}{t} & \frac{4\,\left(-1+\sqrt{6}\right)}{\sqrt{6-\sqrt{6}}} & 0 & 0 \\
-\sqrt{6} & \frac{U}{\sqrt{2}\,t} & 0 & 0 & 0 & \frac{-2\,U}{t} & \frac{U}{t} & \frac{4\,t^2-U^2}{\sqrt{2}\,t^2} & 0 & 0 & \sqrt{2} & 0 \\
-\sqrt{6} & -\left(\frac{\sqrt{2}\,U}{t}\right) & 0 & 0 & 0 & \frac{U}{t} & \frac{-5\,U}{t} & 2\,\sqrt{2} & -\left(\frac{U^2}{t^2}\right) & -\left(\frac{\sqrt{2}\,U}{t}\right) & \sqrt{2} & 0 \\
\frac{\sqrt{3}\,U}{2\,t} & 4 & \frac{\sqrt{\frac{3}{2}}\,U}{t} & \frac{-\left(\sqrt{6+\sqrt{6}}\,U\right)}{2\,t} & \frac{3\,\left(\sqrt{2}-2\,\sqrt{3}\right)\,U}{2\,\sqrt{18-3\,\sqrt{6}}\,t} & \frac{4\,t^2-U^2}{\sqrt{2}\,t^2} & 2\,\sqrt{2} & \frac{-7\,U}{2\,t} & \frac{U}{\sqrt{2}\,t} & -\left(\frac{U^2}{t^2}\right) & \frac{-3\,U}{2\,t} & -\left(\frac{U}{\sqrt{2}\,t}\right) \\
\frac{\sqrt{\frac{3}{2}}\,U}{t} & 0 & -\left(\frac{\sqrt{3}\,U}{t}\right) & \frac{\left(\sqrt{2}-3\,\sqrt{3}\right)\,U}{\sqrt{6+\sqrt{6}}\,t} & \frac{\left(\sqrt{\frac{2}{6-\sqrt{6}}}+3\,\sqrt{\frac{3}{6-\sqrt{6}}}\right)\,U}{t} & 0 & -\left(\frac{U^2}{t^2}\right) & \frac{U}{\sqrt{2}\,t} & \frac{-7\,U}{t} & 0 & \frac{-3\,U}{\sqrt{2}\,t} & \frac{U}{t} \\
0 & 0 & 2\,\sqrt{6} & \frac{-4\,\left(1+\sqrt{6}\right)}{\sqrt{6+\sqrt{6}}} & \frac{4\,\left(-1+\sqrt{6}\right)}{\sqrt{6-\sqrt{6}}} & 0 & -\left(\frac{\sqrt{2}\,U}{t}\right) & -\left(\frac{U^2}{t^2}\right) & 0 & \frac{-5\,U}{t} & 0 & 2\,\sqrt{2} \\
\frac{\sqrt{3}\,U}{t} & 2+\frac{U^2}{2\,t^2} & 0 & 0 & 0 & \sqrt{2} & \sqrt{2} & \frac{-3\,U}{2\,t} & \frac{-3\,U}{\sqrt{2}\,t} & 0 & \frac{-3\,U}{t} & \frac{\sqrt{2}\,U}{t} \\
0 & -\left(\frac{U^2}{\sqrt{2}\,t^2}\right) & 0 & 0 & 0 & 0 & 0 & -\left(\frac{U}{\sqrt{2}\,t}\right) & \frac{U}{t} & 2\,\sqrt{2} & \frac{\sqrt{2}\,U}{t} & \frac{-2\,U}{t}
\end{bmatrix}$$