$$K^2_{131} = \begin{bmatrix} \frac{-5\,U}{t} & -\left(\frac{8\,t^2+U^2}{\sqrt{6}\,t^2}\right) & \frac{U}{t} & 0 & \frac{U}{\sqrt{2}\,t} & 0 & 0 & \frac{-4\,t^2+U^2}{\sqrt{3}\,t^2} \\ -\left(\frac{8\,t^2+U^2}{\sqrt{6}\,t^2}\right) & \frac{-11\,U}{2\,t} & 0 & \frac{U}{\sqrt{6}\,t} & \frac{-4}{\sqrt{3}} & -\left(\frac{\sqrt{3}\,U}{t}\right) & \frac{U^2}{\sqrt{3}\,t^2} & \frac{\sqrt{2}\,U}{t} \\ \frac{U}{t} & 0 & \frac{-6\,U}{t} & 4 & \frac{-3\,U}{\sqrt{2}\,t} & 0 & -\left(\frac{\sqrt{2}\,U}{t}\right) & 0 \\ 0 & \frac{U}{\sqrt{6}\,t} & 4 & \frac{-4\,U}{t} & -\left(\frac{U^2}{\sqrt{2}\,t^2}\right) & 0 & 0 & \frac{2\,U}{\sqrt{3}\,t} \\ \frac{U}{\sqrt{2}\,t} & \frac{-4}{\sqrt{3}} & \frac{-3\,U}{\sqrt{2}\,t} & -\left(\frac{U^2}{\sqrt{2}\,t^2}\right) & \frac{-9\,U}{2\,t} & \frac{U^2}{t^2} & \frac{U}{t} & 4\,\sqrt{\frac{2}{3}} \\ 0 & -\left(\frac{\sqrt{3}\,U}{t}\right) & 0 & 0 & \frac{U^2}{t^2} & \frac{-6\,U}{t} & -4 & 0 \\ 0 & \frac{U^2}{\sqrt{3}\,t^2} & -\left(\frac{\sqrt{2}\,U}{t}\right) & 0 & \frac{U}{t} & -4 & \frac{-3\,U}{t} & -\left(\frac{\sqrt{\frac{2}{3}}\,U^2}{t^2}\right) \\ \frac{-4\,t^2+U^2}{\sqrt{3}\,t^2} & \frac{\sqrt{2}\,U}{t} & 0 & \frac{2\,U}{\sqrt{3}\,t} & 4\,\sqrt{\frac{2}{3}} & 0 & -\left(\frac{\sqrt{\frac{2}{3}}\,U^2}{t^2}\right) & \frac{-2\,U}{t} \end{bmatrix}$$