$$K_{81}^2 = \begin{bmatrix} \frac{-6\,U}{t} & -\left(\frac{\sqrt{2}\,U}{t}\right) & 2\,\sqrt{2} & \frac{U}{t} & -\left(\frac{\sqrt{2}\,U}{t}\right) & -2 & 0 & -2 \\ -\left(\frac{\sqrt{2}\,U}{t}\right) & \frac{-4\,U}{t} & -\left(\frac{U^2}{t^2}\right) & 0 & 0 & 0 & 4 & 0 \\ 2\,\sqrt{2} & -\left(\frac{U^2}{t^2}\right) & \frac{-11\,U}{2\,t} & \frac{4\,t^2+U^2}{\sqrt{2}\,t^2} & 0 & -\left(\frac{U}{\sqrt{2}\,t}\right) & 0 & \frac{\sqrt{2}\,U}{t} \\ \frac{U}{t} & 0 & \frac{4\,t^2+U^2}{\sqrt{2}\,t^2} & \frac{-5\,U}{t} & -\left(\frac{U}{\sqrt{2}\,t}\right) & 2 & 0 & 2 \\ -\left(\frac{\sqrt{2}\,U}{t}\right) & 0 & 0 & -\left(\frac{U}{\sqrt{2}\,t}\right) & \frac{-7\,U}{2\,t} & -\left(\frac{4\,t^2+U^2}{\sqrt{2}\,t^2}\right) & -\left(\frac{U^2}{t^2}\right) & 2\,\sqrt{2} \\ -2 & 0 & -\left(\frac{U}{\sqrt{2}\,t}\right) & 2 & -\left(\frac{4\,t^2+U^2}{\sqrt{2}\,t^2}\right) & \frac{-4\,U}{t} & 0 & \frac{U}{t} \\ 0 & 4 & 0 & 0 & -\left(\frac{U^2}{t^2}\right) & 0 & \frac{-5\,U}{t} & \frac{\sqrt{2}\,U}{t} \\ -2 & 0 & \frac{\sqrt{2}\,U}{t} & 2 & 2\,\sqrt{2} & \frac{U}{t} & \frac{\sqrt{2}\,U}{t} & \frac{-3\,U}{t} \end{bmatrix}$$