$$K_{129}^2 = \begin{bmatrix} \frac{-15\,U}{2\,t} & \frac{U}{\sqrt{2}\,t} & \frac{-4\left(-11+\sqrt{22}\right)}{11\,\sqrt{2-2\,\sqrt{\frac{2}{11}}}} & \frac{-4\left(11+\sqrt{22}\right)}{11\,\sqrt{2+2\,\sqrt{\frac{2}{11}}}} \\ \frac{U}{\sqrt{2}\,t} & \frac{-3\,U}{t} & \frac{36\left(11\,\sqrt{2-2\,\sqrt{\frac{2}{11}}}+\sqrt{242-22\,\sqrt{22}}\right)t^2+\left(-6\,\sqrt{242-22\,\sqrt{22}}+11\left(\sqrt{44-4\,\sqrt{22}}+4\,\sqrt{11-\sqrt{22}}\right)\right)U^2}{66\,\sqrt{52-8\,\sqrt{22}}\,t^2} & \frac{24\,\sqrt{11}\,t^2-\left(11\,\sqrt{2}+2\,\sqrt{11}\right)U^2}{22\,\sqrt{2+2\,\sqrt{\frac{2}{11}}}\,t^2} \\ \frac{4-4\,\sqrt{\frac{2}{11}}}{\sqrt{2-2\,\sqrt{\frac{2}{11}}}} & \frac{36\left(11\,\sqrt{2-2\,\sqrt{\frac{2}{11}}}+\sqrt{242-22\,\sqrt{22}}\right)t^2+\left(-6\,\sqrt{242-22\,\sqrt{22}}+11\left(\sqrt{44-4\,\sqrt{22}}+4\,\sqrt{11-\sqrt{22}}\right)\right)U^2}{66\,\sqrt{52-8\,\sqrt{22}}\,t^2} & \frac{2783\,U-5115\,\sqrt{\frac{2}{13-2\,\sqrt{22}}}\,U+1074\,\sqrt{\frac{11}{13-2\,\sqrt{22}}}\,U}{-572\,t+88\,\sqrt{22}\,t} & \frac{-5\left(12\,\sqrt{11}+121\,\sqrt{\frac{11+\sqrt{22}}{11-\sqrt{22}}}-11\,\sqrt{\frac{22\left(11+\sqrt{22}\right)}{11-\sqrt{22}}}\right)U}{396\,t} \\ \frac{-4\left(11+\sqrt{22}\right)}{11\,\sqrt{2+2\,\sqrt{\frac{2}{11}}}} & \frac{24\,\sqrt{11}\,t^2-\left(11\,\sqrt{2}+2\,\sqrt{11}\right)U^2}{22\,\sqrt{2+2\,\sqrt{\frac{2}{11}}}\,t^2} & \frac{-5\left(12\,\sqrt{11}+121\,\sqrt{\frac{11+\sqrt{22}}{11-\sqrt{22}}}-11\,\sqrt{\frac{22\left(11+\sqrt{22}\right)}{11-\sqrt{22}}}\right)U}{396\,t} & -\frac{\left(\left(578+109\,\sqrt{22}+160\,\sqrt{26+4\,\sqrt{22}}\right)U\right)}{4\,\sqrt{2+2\,\sqrt{\frac{2}{11}}}\left(11+\sqrt{22}\right)^{\frac{3}{2}}\,t} \end{bmatrix}$$