$$
H_{129} = \left[\begin{array}{cccc}
2\,h-6\,\mu+2\,U & 0 & \frac{\sqrt{\frac{4-4\,\sqrt{\frac{2}{11}}}{52-8\,\sqrt{22}}}\,t}{2}+\frac{7\,\sqrt{\frac{121-11\,\sqrt{22}}{52-8\,\sqrt{22}}}\,t}{11}-\sqrt{\frac{22-2\,\sqrt{22}}{52-8\,\sqrt{22}}}\,t & \frac{91\,\sqrt{\frac{2+2\,\sqrt{\frac{2}{11}}}{26+4\,\sqrt{22}}}\,t}{24}+\frac{5\,\sqrt{\frac{11+\sqrt{22}}{22\,\left(26+4\,\sqrt{22}\right)}}\,t}{12}+\sqrt{\frac{11+\sqrt{22}}{26+4\,\sqrt{22}}}\,t \\
0 & 2\,h-6\,\mu+U & \sqrt{\frac{2}{2-2\,\sqrt{\frac{2}{11}}}}\,t-\frac{2\,t}{\sqrt{11\,\left(2-2\,\sqrt{\frac{2}{11}}\right)}} & -\left(\sqrt{\frac{2}{2+2\,\sqrt{\frac{2}{11}}}}\,t\right)-\frac{2\,t}{\sqrt{11\,\left(2+2\,\sqrt{\frac{2}{11}}\right)}} \\
\frac{\sqrt{\frac{4-4\,\sqrt{\frac{2}{11}}}{52-8\,\sqrt{22}}}\,t}{2}+\frac{7\,\sqrt{\frac{121-11\,\sqrt{22}}{52-8\,\sqrt{22}}}\,t}{11}-\sqrt{\frac{22-2\,\sqrt{22}}{52-8\,\sqrt{22}}}\,t & \sqrt{\frac{2}{2-2\,\sqrt{\frac{2}{11}}}}\,t-\frac{2\,t}{\sqrt{11\,\left(2-2\,\sqrt{\frac{2}{11}}\right)}} & \frac{286\,h}{\left(-11+\sqrt{22}\right)^2}-\frac{44\,\sqrt{22}\,h}{\left(-11+\sqrt{22}\right)^2}-\frac{858\,\mu}{\left(-11+\sqrt{22}\right)^2}+\frac{132\,\sqrt{22}\,\mu}{\left(-11+\sqrt{22}\right)^2}+\frac{143\,U}{\left(-11+\sqrt{22}\right)^2}-\frac{22\,\sqrt{22}\,U}{\left(-11+\sqrt{22}\right)^2} & 0 \\
\frac{91\,\sqrt{\frac{2+2\,\sqrt{\frac{2}{11}}}{26+4\,\sqrt{22}}}\,t}{24}+\frac{5\,\sqrt{\frac{11+\sqrt{22}}{22\,\left(26+4\,\sqrt{22}\right)}}\,t}{12}+\sqrt{\frac{11+\sqrt{22}}{26+4\,\sqrt{22}}}\,t & -\left(\sqrt{\frac{2}{2+2\,\sqrt{\frac{2}{11}}}}\,t\right)-\frac{2\,t}{\sqrt{11\,\left(2+2\,\sqrt{\frac{2}{11}}\right)}} & 0 & 2\,h-6\,\mu+U
\end{array}\right]
$$