$$
H_{81} \quad = \quad \left[\begin{array}{cccccccc}
-6\,\mu + 2\,U & 0 & 0 & 0 & 0 & 0 & -\left(\sqrt{2}\,t\right) & 2\,t \\
0 & -6\,\mu + 2\,U & -2\,t & 0 & 0 & \sqrt{2}\,t & 0 & -\left(\sqrt{2}\,t\right) \\
0 & -2\,t & -6\,\mu + 2\,U & \sqrt{2}\,t & t & 0 & 0 & 0 \\
0 & 0 & \sqrt{2}\,t & -6\,\mu + 2\,U & 0 & 0 & -\left(\sqrt{2}\,t\right) & 0 \\
0 & 0 & t & 0 & -6\,\mu + U & -\left(\sqrt{2}\,t\right) & -2\,t & 0 \\
0 & \sqrt{2}\,t & 0 & 0 & -\left(\sqrt{2}\,t\right) & -6\,\mu + U & 0 & 0 \\
-\left(\sqrt{2}\,t\right) & 0 & 0 & -\left(\sqrt{2}\,t\right) & -2\,t & 0 & -6\,\mu + U & 0 \\
2\,t & -\left(\sqrt{2}\,t\right) & 0 & 0 & 0 & 0 & 0 & -6\,\mu + U
\end{array} \right]
$$