$$H_{64} = \begin{bmatrix} -6\,\mu + U & 0 & -2\,\sqrt{2}\,t & 0 & 0 & \sqrt{2}\,t & 0 & 0 & \sqrt{2}\,t & 0 \\ 0 & -6\,\mu + U & 0 & 0 & -\left(\sqrt{2}\,t\right) & 0 & t & -\left(\sqrt{2}\,t\right) & 0 & 0 \\ -2\,\sqrt{2}\,t & 0 & -6\,\mu + U & -2\,t & 0 & 0 & -\left(\sqrt{2}\,t\right) & 2\,t & 0 & 0 \\ 0 & 0 & -2\,t & -6\,\mu + U & 0 & 0 & 0 & 0 & 2\,t & -\left(\sqrt{2}\,t\right) \\ 0 & -\left(\sqrt{2}\,t\right) & 0 & 0 & -6\,\mu + U & 0 & 0 & 0 & 0 & \sqrt{2}\,t \\ \sqrt{2}\,t & 0 & 0 & 0 & 0 & -6\,\mu + 2\,U & \sqrt{2}\,t & 0 & 0 & 0 \\ 0 & t & -\left(\sqrt{2}\,t\right) & 0 & 0 & \sqrt{2}\,t & -6\,\mu + 2\,U & 0 & 0 & 0 \\ 0 & -\left(\sqrt{2}\,t\right) & 2\,t & 0 & 0 & 0 & 0 & -6\,\mu + 2\,U & -2\,t & 2\,\sqrt{2}\,t \\ \sqrt{2}\,t & 0 & 0 & 2\,t & 0 & 0 & 0 & -2\,t & -6\,\mu + 2\,U & 0 \\ 0 & 0 & 0 & -\left(\sqrt{2}\,t\right) & \sqrt{2}\,t & 0 & 0 & 2\,\sqrt{2}\,t & 0 & -6\,\mu + 2\,U \end{bmatrix}$$