



$$\begin{aligned}
 \hat{H} = & \omega_1 \hat{n}_1 - \frac{\alpha_1}{2} (\hat{n}_1 - \hat{n}_1^2) \\
 & + \omega_2 \hat{n}_2 - \frac{\alpha_2}{2} (\hat{n}_2 - \hat{n}_2^2) \\
 & + J (\hat{b}_1^\dagger + \hat{b}_2 + \hat{b}_1 \hat{b}_2^\dagger) \\
 & + \epsilon(t) [\hat{b}_1 + \hat{b}_1^\dagger + \lambda \hat{b}_2 + \lambda \hat{b}_2^\dagger]
 \end{aligned}$$

$$\hat{n}_1 = \hat{b}_1^\dagger \hat{b}_1$$

$$\begin{aligned}
 \omega_1 &= 4.4 \text{ GHz} \\
 \omega_2 &= 4.6 \text{ GHz} \\
 \alpha_1 &= 210 \text{ MHz} \\
 \alpha_2 &= 215 \text{ MHz}
 \end{aligned}$$