

Maxwell-Bloch equations 1:

$$\partial_t E(t) = i(\omega - \Omega + i\frac{\gamma_C}{2})E(t) + i\frac{\omega}{2\epsilon_0}P(t)$$

$$\partial_t P(t) = -(\gamma' + i\delta)P(t) - i\frac{d_{eg}^2}{\hbar}E(t)N(t)$$

$$\partial_t N(t) = -\frac{1}{\hbar}Im\{P^*(t)E(t)\} - \gamma(N(t) - N_0)$$