1 Simplifies Optical Bloch Equation for Sideband Cooling Simulation.

Rabi frequency between state m and n (assume to be real since the phase is not important for sidband cooling.): Ω_{mn}
Pumping rate from state n to m: Γ_{mn}

Diagonal terms,

$$\frac{\partial \rho_{mm}}{\partial t} = -\rho_{mm}\sum_k \Gamma_{km} + \sum_k \rho_{kk}\Gamma_{mk} + \mathrm{i}\sum_k (\rho_{mk}\Omega_{km} - \Omega_{mk}\rho_{km})$$

Off-diagnal terms,

$$\frac{\partial \rho_{mn}}{\partial t} = -\frac{\rho_{mn}}{2}\sum_k (\Gamma_{km} + \Gamma_{kn}) + \mathrm{i}\sum_k (\rho_{mk}\Omega_{kn} - \Omega_{mk}\rho_{kn})$$