STIRAP

Philippe W. Courteille, 27/12/2021

Solution: *a. The Hamiltonian is,*

$$\hat{H} = \hbar \begin{pmatrix} 0 & \frac{1}{2}\Omega_{12} & 0 \\ \frac{1}{2}\Omega_{12} & 0 & \frac{1}{2}\Omega_{23} \\ 0 & \frac{1}{2}\Omega_{23} & 0 \end{pmatrix} .$$

It is implemented in the numerical MATLAB code given in the file 'LM_Bloch_Stirap.m'. Fig. 2.17(a) shows the temporal variation of the Rabi frequencies. The result of the simulations is shown in Fig. 2.17(b).
b. The Liouville matrix can be found in the MATLAB numerical code given in the file 'LM_Bloch_Stirap.m'.
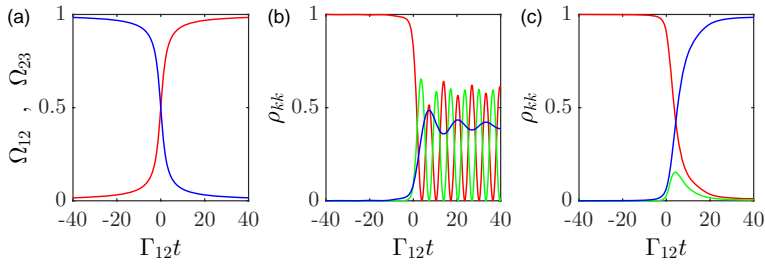*c. Fig. 2.17(c) shows the results of the simulations.*

Figure 2.17: (code for download) (a) Temporal variation of laser intensities. (b) Variation of the populations obtained by simulation of the Schrödinger equation, and (c) of the Bloch equations: ρ_{11} in red, ρ_{22} in green, and ρ_{33} in blue.