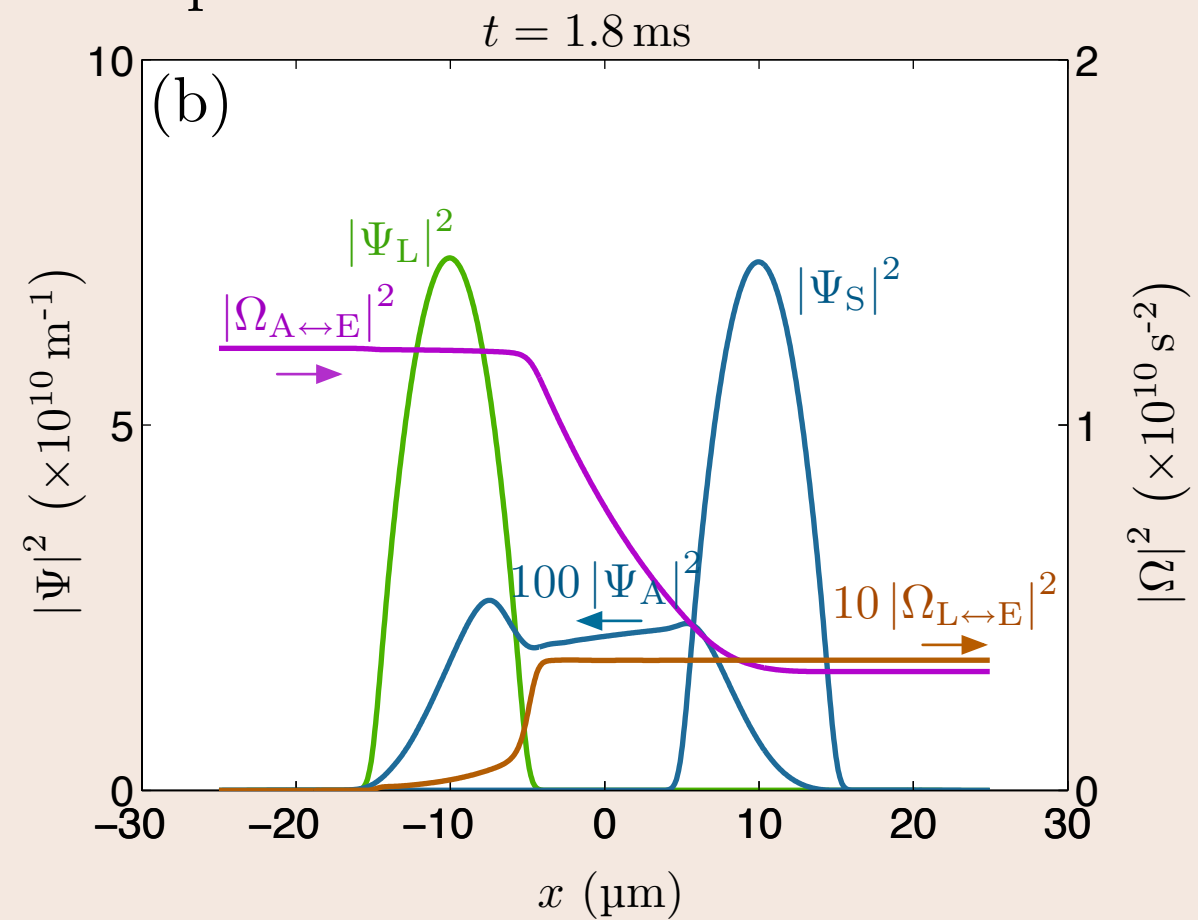
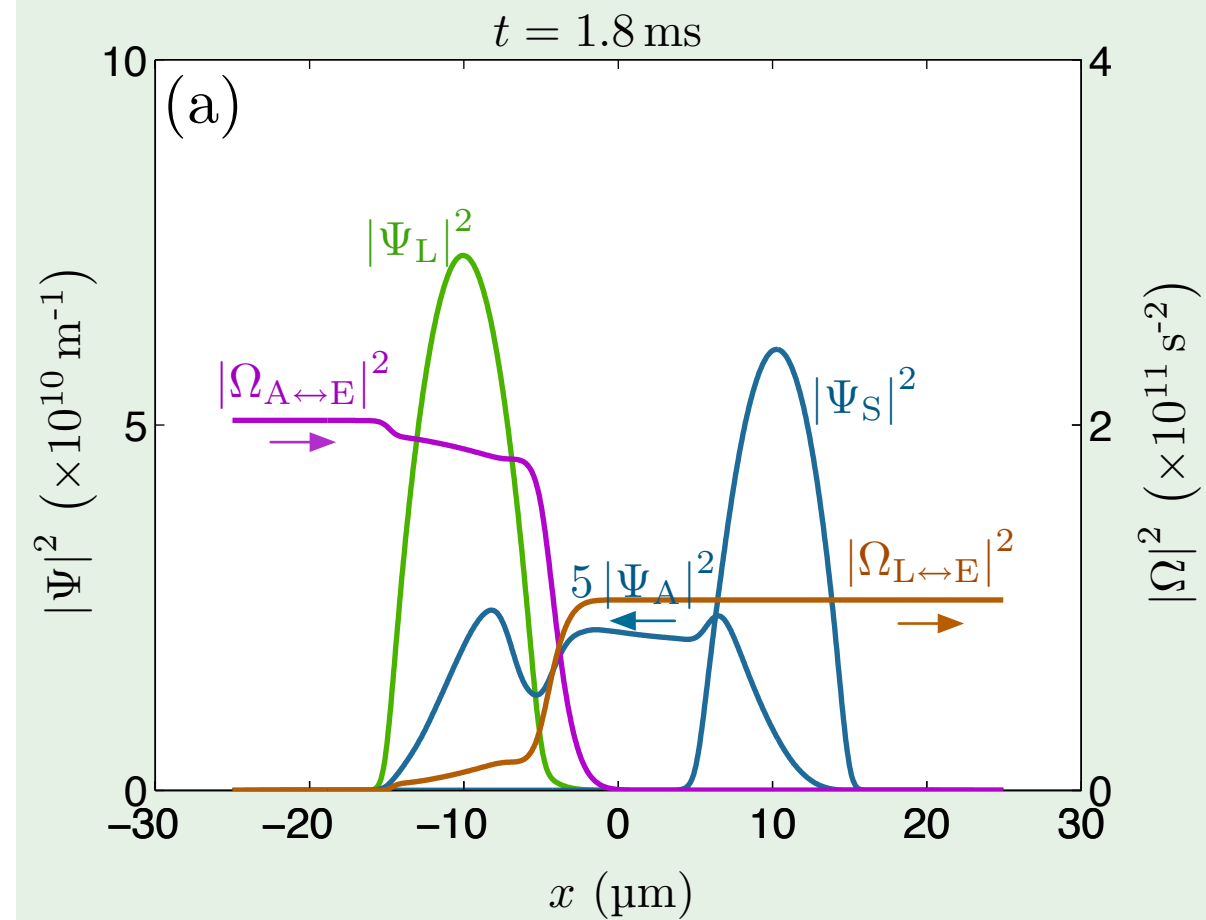
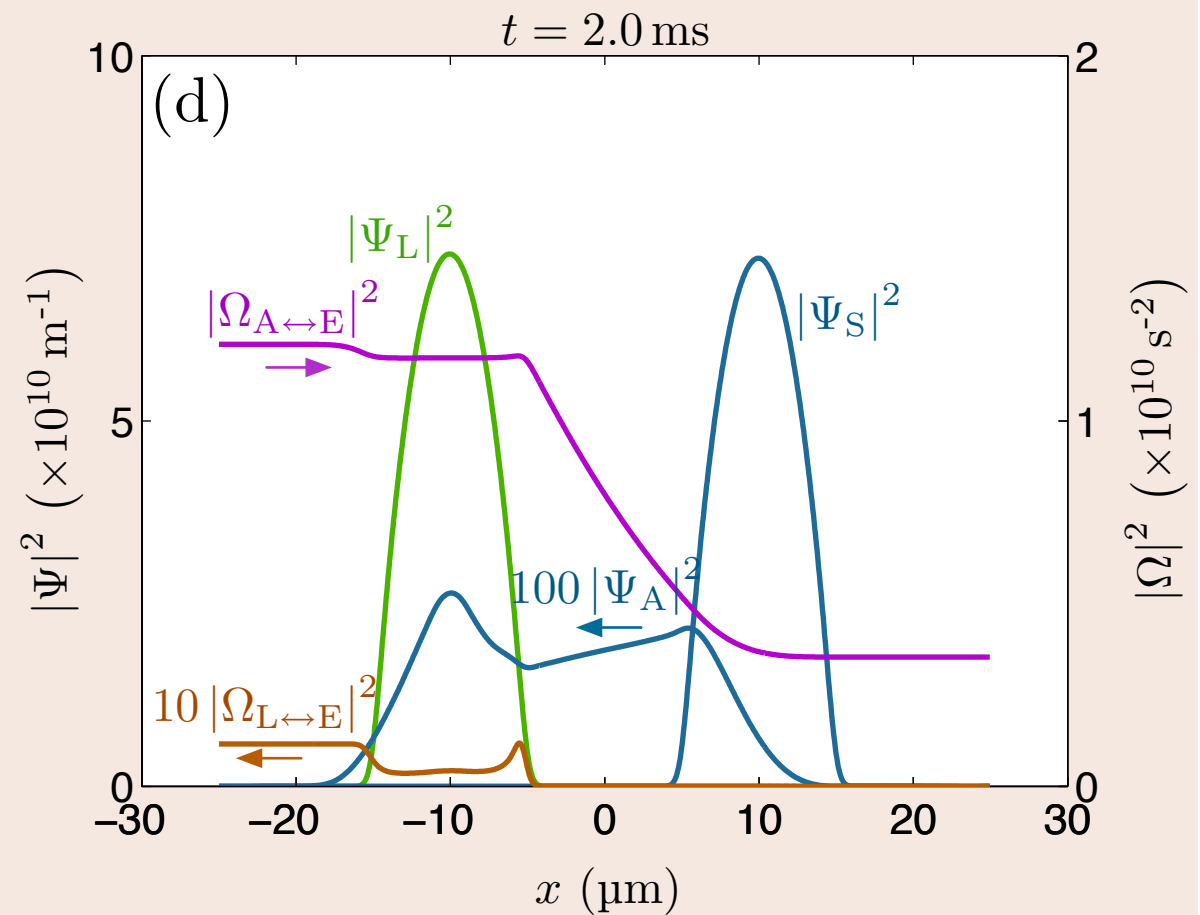
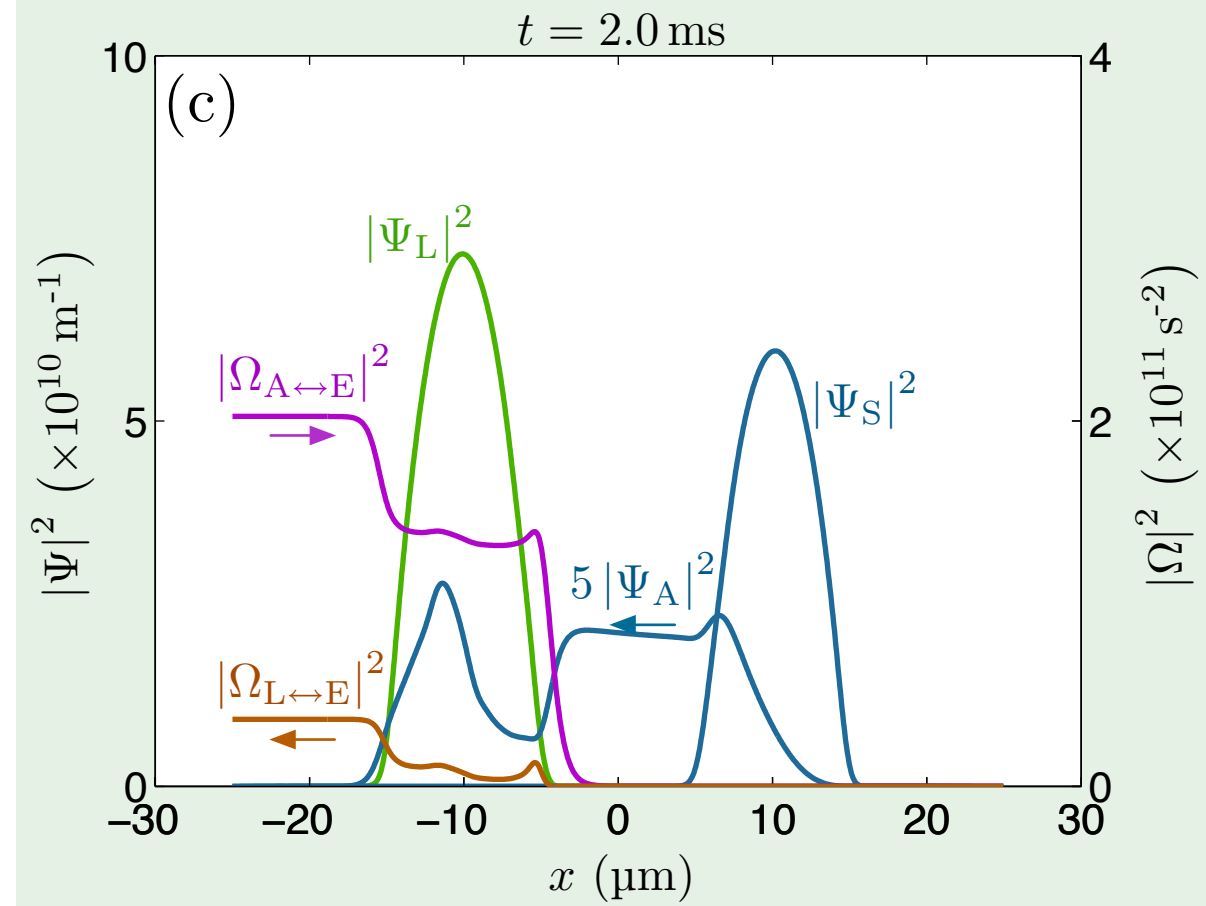


# $0\hbar k$ momentum-transfer process



# $2\hbar k$ momentum-transfer process



High-flux atom laser

$$\Omega_{\text{Raman}} = 5 \times 10^2 \text{ s}^{-1}$$

Low-flux atom laser

$$\Omega_{\text{Raman}} = 1 \times 10^2 \text{ s}^{-1}$$