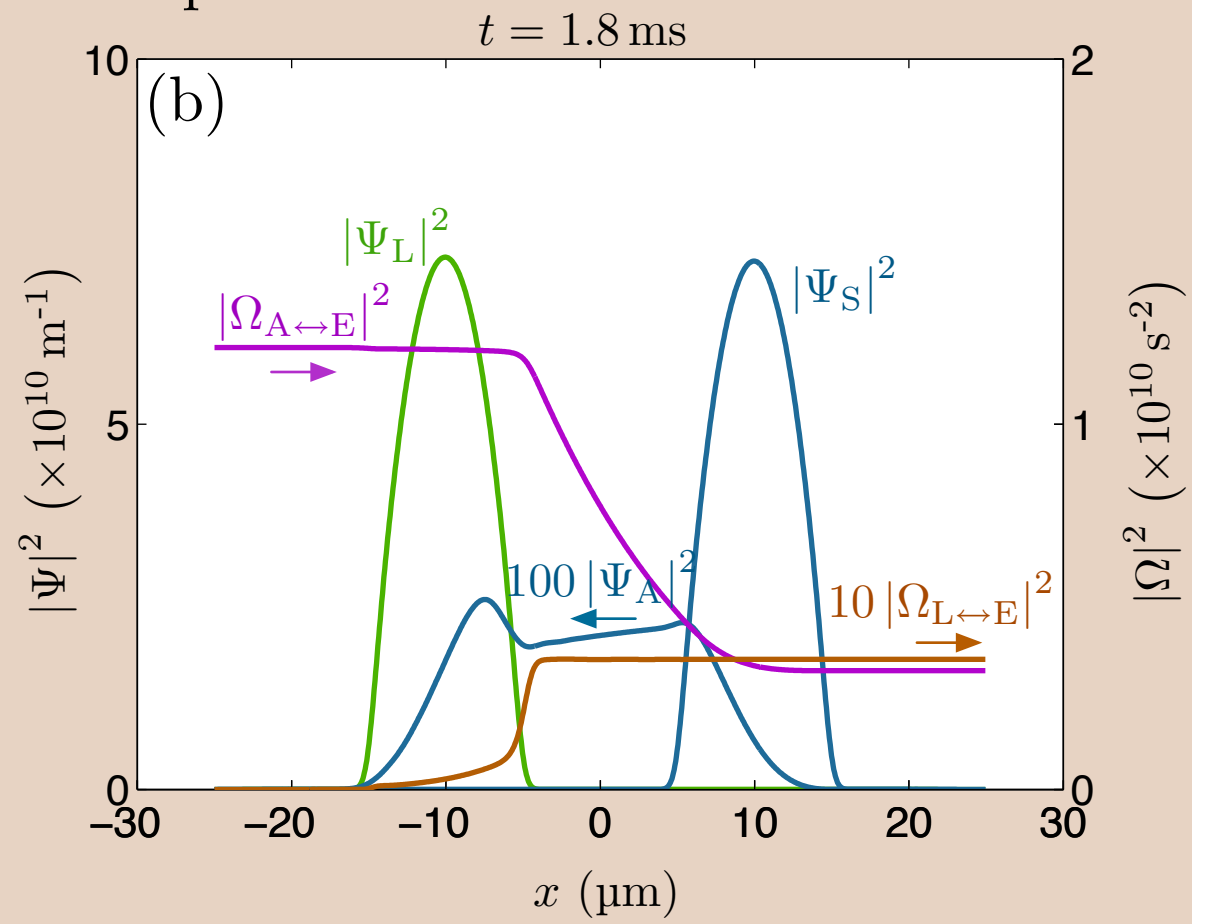
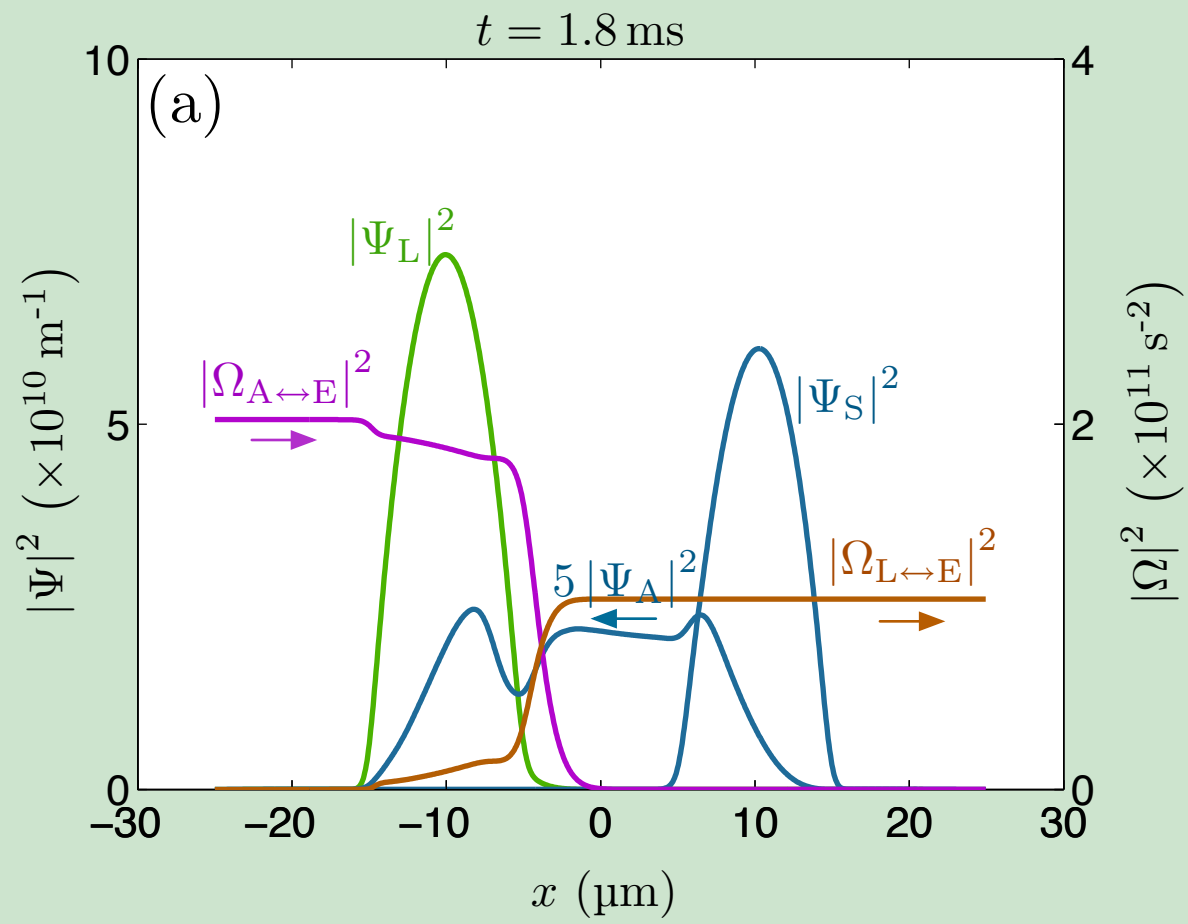
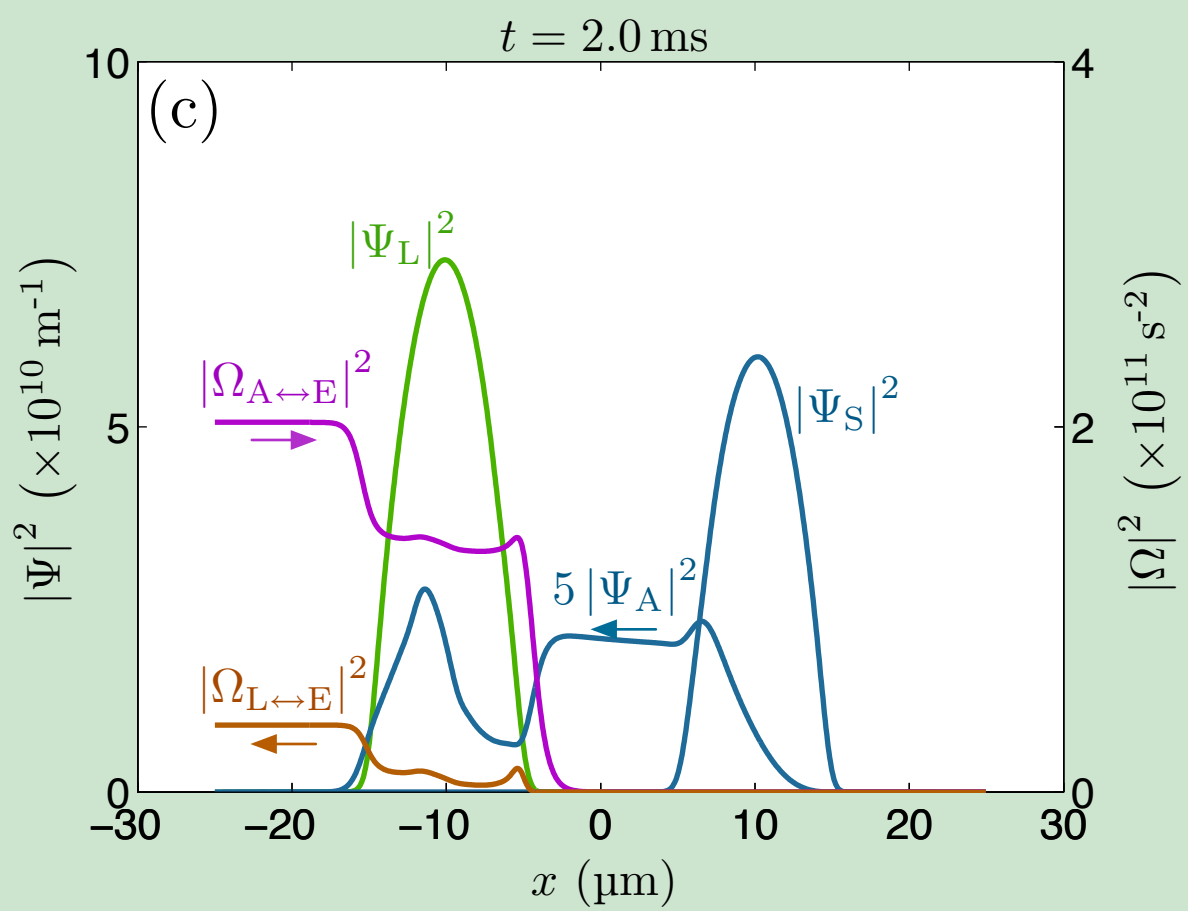


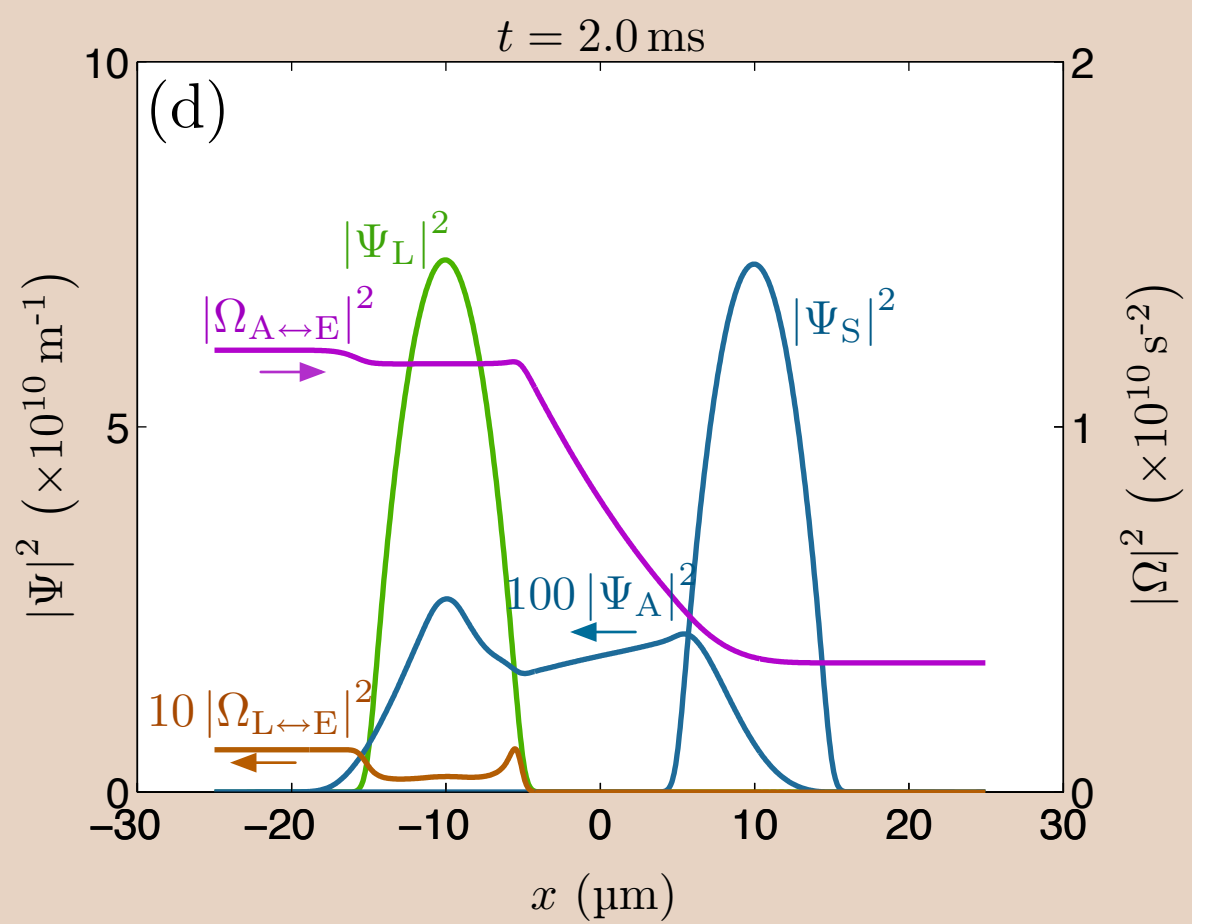
# $0\hbar k$ momentum-transfer process



# $2\hbar k$ momentum-transfer process



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



Low-flux atom laser  
 $\Omega_{\text{Raman}} = 10^2 \text{ s}^{-1}$