

PHYS 452: Quantum Mechanics II - Fall 2016
Homework #6, due Thursday November 24 in class

Quantum scattering

1. The adiabatic theorem says that if a particle started in the n -th state of the initial Hamiltonian $H(t_i)$ then it ends up in the n -th state of the final Hamiltonian, $H(t_f)$, provided that the change from $H(t_i)$ to $H(t_f)$ is adiabatic (i.e. very slow and continuous). Now what if a particle starts in a linear combination of states n and k ? Is it going to end up in a linear combination of states n and k of the final Hamiltonian? To answer that question follow *carefully* the derivation of the adiabatic theorem (use lecture notes or the textbook).
2. Problem 10.1 in Griffiths
3. Problem 10.3 in Griffiths
4. Problem 10.4 in Griffiths