

Ph195b – Study problems for 1/23/02

1. The notes for 1/23/02 (also Merzbacher p. 84) discuss the fact that the harmonic oscillator ground state is forbidden from having zero energy by the Uncertainty Principle. But at least classically, we know that we can shift all energies in a problem by an arbitrary constant and nothing changes! What's going on? Think carefully about this.

2. Merzbacher, Chapter 5 Problem 4: For the energy eigenstates with $n = 0, 1,$ and $2,$ compute the probability that the coordinate of a linear harmonic oscillator in its ground state has a value greater than the amplitude of a classical oscillator of the same energy.