

Home assignment 3

due on June 5

Problem 1.

Find the energy levels of an electron in a potential $V(r) = \frac{1}{2}m\omega_0^2 r^2$ and a uniform magnetic field B . (One may assume that electrons are confined to the plane, perpendicular to the field B). What is the shape of the wave functions? Based on semiclassical arguments, try to predict the energy levels and shape of wave function for generic smooth potential?