September 4, 2010

PHY 741 – Problem Set #5

Continue Chapter 2 in **Mahan**; homework is due Wednesday, September 8, 2010.

Consider a particle of mass m moving in a one dimensional potential defined by Eq. (2.97) of your text. The electric field F is given by

$$F = v\frac{\hbar^2}{2ma^3},$$

where in our case, $v = 8$ and a represents the bohr radius. Determine the first 3 eigenvalues E_n and eigenfunctions $\psi_n(x)$ of this system. Plot the eigenfunctions for $0 \leq x/a \leq 10$.