

Tutorial 7: Modern Physics

1. While an infinite well has an infinite number of bound states, a finite well does not. By relating the well height U_0 to the kinetic energy, and the kinetic energy (through λ) to n and L , show that the number of bound states is given roughly by $\sqrt{8mL^2U_0}/h2$.
2. A particle of mass m moves in a three-dimensional box with edge lengths L_1, L_2, L_3 . Find the energies of the six lowest states if $L_1 = L$, $L_2 = 2L$, and $L_3 = 2L$. Which of these states are degenerate?