NPTEL Video Course - Physics - NOC:Introductory Quantum Mechanics

Subject Co-ordinator - Prof. Manoj K Harbola

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 30 - Stationary-state Schrodinger equation and its solution for a particle in a box
Lecture 31 - Solution of the stationary-state Schrodinger equation for a simple harmonic oscillator
Lecture 32 - Equivalance of Heisenberg and the Schrodinger formulations
Lecture 33 - Equivalance of Heisenberg and Schrodinger formulations
Lecture 34 - Born interpretation of the wavefunction and expectation values of x and p operators
Lecture 35 - Uncertainty principle and its simple applications
Lecture 36 - Time dependent Schrodinger equation the probability current density and the continuity equation
Lecture 37 - Ehrenfest theorem for the expectation values of x and p operators
Lecture 38 - Solution of Schrodinger equation for a particle in one and two delta function potentials
Lecture 39 - Solution of Schrodinger equation for a particle in a finite well
Lecture 40 - Numerical solution of a one dimensional Schrodinger equation for bound states - I
Lecture 41 - Numerical solution of a one dimensional Schrodinger equation for bound states - II
Lecture 42 - Reflection and transmission of particles across a potential barrier
Lecture 43 - Quantum-tunneling and its examples
Lecture 44 - Solution of the Schrodinger for free paticles and periodic boundary conditions
Lecture 45 - Electrons in a metal
Lecture 46 - Schrodinger equation for particles in spherically symmetric potential, angular momentum operator
Lecture 47 - Angular momentum operator and its eigenfunctions
Lecture 48 - Equation for radial component of the wavefunction in spherically symmteric potentials and genera
Lecture 49 - Solution for radial component of the wavefunction for the hydrogen atom
Lecture 50 - Numerical solution for the radial component of wavefunction for spherically symmetric potentials
Lecture 51 - Solution of the Schrodinger equation for one dimensional periodic potential
Lecture 52 - Kroning-Penny model and energy bands
Lecture 53 - Kroning-Penny model with periodic Dirac delta function and energy bands
Lecture 54 - Discussion on bands
Lecture 55 - Summary of the course