

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Physics - NOC:Elements of Modern Physics

Subject Co-ordinator - Prof. Saurabh Basu

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Reviews of Classical Physics - Newtons Laws of Motion
- Lecture 2 - Lagrangian Mechanics
- Lecture 3 - Special Theory of Relativity
- Lecture 4 - Postulates of Quantam Mechanics, Old Quantam Theory
- Lecture 5 - Hydrogen Spectra, Stern Gerlach, Compton Effect
- Lecture 6 - Wavefunction, Operators, Representations in QM
- Lecture 7 - Solution of Schroedinger Equation for 1D potentials
- Lecture 8 - Harmonic Oscillator, Hydrogen Atom
- Lecture 9 - Spin Angular Momentum, Perturbation Theory
- Lecture 10 - Degenerate Perturbation Theory, Stark Effect
- Lecture 11 - Zeeman Effect
- Lecture 12 - Operator Methods for Harmonic Oscillator
- Lecture 13 - Variational Theory
- Lecture 14 - Time Dependent Perturbation Theory
- Lecture 15 - Clebsch-Gordon Coefficients
- Lecture 16 - Electrostatics
- Lecture 17 - Dielectrics
- Lecture 18 - Laplaces Equation, Magnetostatics, Maxwell's Equations
- Lecture 19 - Ensembles, Microstates and Macrostates
- Lecture 20 - Sackur-Tetrode Equation, Density Matrices
- Lecture 21 - Identical Particles
- Lecture 22 - Quantum Statistics
- Lecture 23 - Crystal Structure, Bragg's Law
- Lecture 24 - Lattice Vibrations, Specific Heat
- Lecture 25 - Free Electron Theory
- Lecture 26 - Magnetism and Magnetic Materials
- Lecture 27 - Superconductivity, Meissner Effect, Type I and II Superconductors
- Lecture 28 - Nuclear Models
- Lecture 29 - Radioactive Decay, Half Life

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- Lecture 30 - Binding Energy, Shell Model, Liquid drop model
- Lecture 31 - Klein-Gordon and Dirac Equations
- Lecture 32 - Elementary Particles, Detectors
- Lecture 33 - Periodic Table of Elementary Particles, Quark Model