

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Physics of Nanoscale Devices

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Co-ordinating Institute - IIT - Roorkee

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

- Lecture 1 - Introduction
- Lecture 2 - Introduction and Course Overview
- Lecture 3 - Basics of Quantum Mechanics
- Lecture 4 - Electron in a Potential Well
- Lecture 5 - Electrons in Solids
- Lecture 6 - KP Model
- Lecture 7 - KP Model, Effective Mass
- Lecture 8 - Bands, Effective Mass, DOS
- Lecture 9 - Effective Mass, DOS
- Lecture 10 - Density of States
- Lecture 11 - Density of States
- Lecture 12 - Density of States - 3D, 2D
- Lecture 13 - Density of States - 2D, 1D, 0D
- Lecture 14 - DOS, Fermi Function
- Lecture 15 - Fermi-Dirac Distribution
- Lecture 16 - Fermi Function, General Model of Transport
- Lecture 17 - General Model of Transport - I
- Lecture 18 - General Model of Transport - II
- Lecture 19 - General Model of Transport - III
- Lecture 20 - General Model of Transport, Modes
- Lecture 21 - Modes - I
- Lecture 22 - Modes - II
- Lecture 23 - Modes, Diffusive Transport
- Lecture 24 - Diffusive Transport
- Lecture 25 - Diffusive Transport, Conductance
- Lecture 26 - Conductance, Bulk Transport - I
- Lecture 27 - Conductance, Bulk Transport - II
- Lecture 28 - Resistance: Ballistic and Diffusive Cases - I
- Lecture 29 - Resistance: Ballistic and Diffusive Cases - II

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- Lecture 30 - Resistance: Ballistic and Diffusive Cases - III
- Lecture 31 - Resistance: Diffusive Case
- Lecture 32 - The Idea of Mobility
- Lecture 33 - Voltage Drop in Ballistic Conductor
- Lecture 34 - 1D and 2D Realistic Conductors
- Lecture 35 - Introduction to MOSFET - I
- Lecture 36 - Introduction to MOSFET - II
- Lecture 37 - MOSFET: A Barrier Controlled Device
- Lecture 38 - MOSFET Electrical Characteristics
- Lecture 39 - MOSFET IV Characteristics - I
- Lecture 40 - MOSFET IV Characteristics - II
- Lecture 41 - MOSFET IV Characteristics - III
- Lecture 42 - MOSFET IV Characteristics - Traditional Approach
- Lecture 43 - MOSFET: Transport - I
- Lecture 44 - MOSFET: Transport - II
- Lecture 45 - MOSFET: Landauer Transport
- Lecture 46 - Landauer Transport and Ballistic MOSFET
- Lecture 47 - Ballistic MOSFET
- Lecture 48 - Ballistic Injection Velocity
- Lecture 49 - Velocity Saturation in Ballistic MOSFET and Electrostatics
- Lecture 50 - MOS Electrostatics
- Lecture 51 - MOS Electrostatics
- Lecture 52 - MOSFET: Electrostatics, Threshold Voltage
- Lecture 53 - MOSFET: 2D Electrostatics
- Lecture 54 - MOSFET: 2D Electrostatics and Quantum Confinement
- Lecture 55 - ETSOI MOSFETs, Quantum Confinement, Strain Engineering
- Lecture 56 - Strain Engineering, Thermoelectric Effects
- Lecture 57 - Thermoelectric Effects
- Lecture 58 - Thermoelectric Effects, Quantum Dot Devices
- Lecture 59 - Quantum Dot Devices
- Lecture 60 - Quantum Dot Devices - IV Characteristics, DFT, Course Summary