

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

NPTEL Video Course - Physics - NOC:Quantum Hall Effects

Subject Co-ordinator - Prof. Saurabh Basu

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Conductance in Nanostructures
- Lecture 2 - S-Matrix, Reflection and Transmission
- Lecture 3 - Introduction to Classical and Quantum Hall Effect
- Lecture 4 - Quantum Hall Effect
- Lecture 5 - Landau Levels
- Lecture 6 - Degenracy of Landau levels
- Lecture 7 - Shubnikov de Haas Oscillations
- Lecture 8 - Kubo Formula
- Lecture 9 - Symmetric gauge
- Lecture 10 - Tight binding model, Hofstadter Butterfly
- Lecture 11 - Topological Invariant, Chern number
- Lecture 12 - Electronic structure of Graphene
- Lecture 13 - Low energy Dispersion
- Lecture 14 - Dirac Hamiltonian, Hofstadter Butterfly
- Lecture 15 - QHE, Landau Levels
- Lecture 16 - Properties of Spin angular Momentum, Spin Hall Effect
- Lecture 17 - Quantum spin Hall insulator, Kane-Mele Model
- Lecture 18 - Kane-Mele Model
- Lecture 19 - Landau gauge in fractional quantum Hall effect
- Lecture 20 - Laughlin States, Properties
- Lecture 21 - Plasma analogy
- Lecture 22 - Composite Fermions, Hierarchy

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