

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

NPTEL Video Course - Physics - NOC:Topology and Condensed Matter Physics

Subject Co-ordinator - Prof. Saurabh Basu

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Introduction to Topology
- Lecture 2 - Topological invariant, Berry phase
- Lecture 3 - Second quantization
- Lecture 4 - Ten Fold Classification
- Lecture 5 - Symmetries and SSH - model
- Lecture 6 - SSH - model, Introduction to superconductivity
- Lecture 7 - Kitaev model
- Lecture 8 - Introduction to Classical and Quantum Hall effect
- Lecture 9 - Quantum Hall Effect
- Lecture 10 - Landau Levels
- Lecture 11 - Properties of Landau Levels
- Lecture 12 - Edge modes of Landau levels, Incompressibility of Quantum Hall States
- Lecture 13 - Kubo formula
- Lecture 14 - Hall quantization and Topological invariant
- Lecture 15 - Electronic structure of Graphene
- Lecture 16 - Symmetries and QHE in Graphene
- Lecture 17 - Haldane model
- Lecture 18 - Anomalous quantum Hall effect in Haldane model
- Lecture 19 - Introduction of spin Hall effect
- Lecture 20 - Spin current, quantum spin Hall effect
- Lecture 21 - Quantum spin Hall insulator, Kane Mele model
- Lecture 22 - Kane Mele model with Rashba spin-orbit coupling, spin Hall conductivity
- Lecture 23 - Symmetric gauge in FQHE
- Lecture 24 - Laughlin States
- Lecture 25 - Plasma analogy
- Lecture 26 - Composite Fermions, Hierarchy picture
- Lecture 27 - Topological Consideration of FQHE
- Lecture 28 - 3D Topological Insulators

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