

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

NPTEL Video Course - Physics - NOC:Advanced Condensed Matter Physics

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Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Propagators - I
- Lecture 2 - Propagators - II
- Lecture 3 - Second quantization - I
- Lecture 4 - Second quantization - II
- Lecture 5 - Second quantized Hamiltonian
- Lecture 6 - Tight Binding Hamiltonian, Hubbard model
- Lecture 7 - Magnetism
- Lecture 8 - Singlet and Triplet State
- Lecture 9 - Antiferromagnetism in Hubbard model
- Lecture 10 - Green's function and representations in quantum mechanics
- Lecture 11 - S matrix and free electron Green's function
- Lecture 12 - Wick's theorem and normal ordering
- Lecture 13 - Green's function and Feynman diagrams
- Lecture 14 - Feynman diagram
- Lecture 15 - phonon Green' function and Hartree Fock approximation
- Lecture 16 - Finite temperature Green's function and Matsubara frequencies
- Lecture 17 - Dyson's equation and disorder in electronic systems
- Lecture 18 - Introduction to electrodynamics, Meissner effect
- Lecture 19 - London penetration depth, Type I and II superconductors
- Lecture 20 - Cooper's problem, BCS gap equation
- Lecture 21 - BCS theory, Transition temperature
- Lecture 22 - Ginzburg Landau Theory, Coherence length and penetration depth
- Lecture 23 - Quantum Hall Effect
- Lecture 24 - Spin Hall effect, 2D topological insulator
- Lecture 25 - Bose-Einstein condensation

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