

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

NPTEL Video Course - Physics - NOC:Tapestry of Field theory: Classical and Quantum, Equilibrium and Nonequilibrium

Subject Co-ordinator - Prof. Mahendra K. Verma

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Field Theory and Course
- Lecture 2 - Integration using Complex Analysis
- Lecture 3 - Cauchy Principal Value Theorem
- Lecture 4 - Fourier Transform
- Lecture 5 - Green's Function and Examples
- Lecture 6 - Green's Function in Fourier Space
- Lecture 7 - Fourier Transform, Time Frequency
- Lecture 8 - Green's Function for Helmholtz Equation and Wave Equation
- Lecture 9 - Green's Function for Diffusion and Schrodinger Equation
- Lecture 10 - Dimensional Analysis
- Lecture 11 - Functionals - Part 1
- Lecture 12 - Lagrangian Formalism - Part 2
- Lecture 13 - Relativistic Fields
- Lecture 14 - Hamiltonian Formalism
- Lecture 15 - Principle of Least Action
- Lecture 16 - Relativistic Fields and Hamiltonian Formalism
- Lecture 17 - Noether's Theorem and Symmetries
- Lecture 18 - Review of Quantum Mechanics
- Lecture 19 - Second Quantization
- Lecture 20 - Field Operators
- Lecture 21 - Fock Space and Vacuum Energy
- Lecture 22 - Quantization of Bosons and Fermions
- Lecture 23 - Examples
- Lecture 24 - Free Fermi Gas
- Lecture 25 - Propagators and Perturbations
- Lecture 26 - Relativistic Quantum Field Theory
- Lecture 27 - Feynman Propagator
- Lecture 28 - Review of Statistical Mechanics (Partition Function)
- Lecture 29 - Feynman Path Integral

Get DIGIMAT For High-Speed Video Streaming of NPTEL and Educational Video Courses in LAN

<http://www.digimat.in>

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

- Lecture 30 - Diagrammatic Field Theory (Wick's Theorem)
- Lecture 31 - Wick's Theorem (Continued...)
- Lecture 32 - Diagrammatic Perturbation Theory
- Lecture 33 - Green's Function and Correlation Function
- Lecture 34 - Feynman Diagrams
- Lecture 35 - Phase Transition and Landau Theory
- Lecture 36 - Failure of Landau's Theory
- Lecture 37 - Scale Invariance
- Lecture 38 - Renormalization Group - Preliminary
- Lecture 39 - RG Steps
- Lecture 40 - Perturbative Calculations
- Lecture 41 - RG Fixed Points
- Lecture 42 - Relevant and Irrelevant Variables
- Lecture 43 - Behaviour Near Critical Points
- Lecture 44 - Computing Critical Exponents
- Lecture 45 - Mass and Charge Renormalization, Running Coupling const: \hat{g}_4 Theory
- Lecture 46 - Charge and Mass Renormalization: QED and QCD
- Lecture 47 - Breaking a Continuous Symmetry (Goldstone Mode)
- Lecture 48 - Covariant Electrodynamics (Gauge Interactions)
- Lecture 49 - Higgs Mechanism
- Lecture 50 - Introduction to Non-Equilibrium Field Theory (Langevin Equation)
- Lecture 51 - Fluctuation Dissipation Theorem
- Lecture 52 - Kolgomorov's Theory of Turbulence
- Lecture 53 - Equilibrium and Non Equilibrium Solution of Navier Stokes
- Lecture 54 - Energy Flux in Navier Stokes Equation
- Lecture 55 - RG Analysis of Field Theory of Turbulence
- Lecture 56 - Renormalized Viscosity and Discussion
- Lecture 57 - Renormalization of the Coupling Constant for the Shell Model
- Lecture 58 - Flux Computation for the Shell Model of Turbulence
- Lecture 59 - Renormalization Group Analysis of Navier Stokes Equation
- Lecture 60 - Flux Computation for the Navier Stokes Equation
- Lecture 61 - Functional Form of a Dynamical Equation
- Lecture 62 - Surface Growth Phenomena: Introduction
- Lecture 63 - Surface Growth Phenomena: EW Equation
- Lecture 64 - Surface Growth Phenomena: KPZ Equation
- Lecture 65 - Surface Growth Phenomena: KPZ Equation (Continued...)
- Lecture 66 - RG Procedure for KPZ Equation
- Lecture 67 - Noise Renormalization
- Lecture 68 - Fixed Point Solution

Get DIGIMAT For High-Speed Video Streaming of NPTTEL and Educational Video Courses in LAN

<http://www.digimat.in>

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

- Lecture 69 - Weak Turbulence Theory using Examples
- Lecture 70 - Weak Turbulence Applications (Rotating Turbulence, Internal and Surface Gravity Waves)
- Lecture 71 - Nonlinear Schrodinger Equation
- Lecture 72 - Field Theory of Passive Scalar Turbulence
- Lecture 73 - Course Summary