

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

NPTEL Video Course - Management - NOC:Path Integral Methods in Physics and Finance

Subject Co-ordinator - Prof. J. P. Singh

Co-ordinating Institute - IIT - Roorkee

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

- Lecture 1 - Setting The Scene
- Lecture 2 - Introduction to the Path Integral
- Lecture 3 - Probability Fundamentals, Generating Functions
- Lecture 4 - Generating Functions, Gaussian Distribution
- Lecture 5 - Gaussian Distribution, Gaussian Integration
- Lecture 6 - Gaussian Integration, Central Limit Theorem
- Lecture 7 - Elementary Theory of Stochastic Processes
- Lecture 8 - Evolutionary Equations of Stochastic Processes
- Lecture 9 - Brownian Motion
- Lecture 10 - Diffusion Equation
- Lecture 11 - Diffusion Equation Path Integral - 1
- Lecture 12 - Diffusion Equation Path Integral - 2, Autocorrelators
- Lecture 13 - Schrodinger Equation Path Integral, Langevin Equation
- Lecture 14 - Langevin- Equation
- Lecture 15 - Statistical Formalism of Path Integral
- Lecture 16 - Langevin Equation Path Integral - 1
- Lecture 17 - Langevin Equation Path Integral - 2
- Lecture 18 - Langevin and Fokker Planck Equation; CLT Example
- Lecture 19 - Basic Machinery of Quantum Mechanics
- Lecture 20 - Quantum Mechanical Path Integral
- Lecture 21 - Harmonic Oscillator Path Integral
- Lecture 22 - Free Particle Path Integral
- Lecture 23 - Equivalence of Schrodinger and Path Integral Formalisms, Matrix Elements of Operators
- Lecture 24 - Ground State Expectation Values
- Lecture 25 - Vacuum Persistence Amplitude
- Lecture 26 - Harmonic Oscillator 2-Point Problem
- Lecture 27 - Relativistic Path Integral
- Lecture 28 - Interpretation of Path Integral
- Lecture 29 - Need For Quantum Field Theory

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- Lecture 30 - Quantum Field Theory, Introduction
- Lecture 31 - Field Theory Basics
- Lecture 32 - Field Theory In Zero Dimensions - 1
- Lecture 33 - Field Theory In Zero Dimensions - 2
- Lecture 34 - Schwinger Dyson Eqs, Convergence Of Integrals
- Lecture 35 - Sde, Feynman Diagrams
- Lecture 36 - Feynman Diagrams and Sde
- Lecture 37 - Effective Action, Renormalization
- Lecture 38 - Renormalization In 0-d
- Lecture 39 - Field Theory In 1-D - 1
- Lecture 40 - Field Theory in 1-d - 2
- Lecture 41 - Euclidean Field Theory - 1
- Lecture 42 - Euclidean Field Theory - 2
- Lecture 43 - Euclidean Field Theory - 3
- Lecture 44 - Field Theory In Minkowski Space
- Lecture 45 - Propagator In Minkowski Space
- Lecture 46 - Propagator Properties In Minkowski Space
- Lecture 47 - Interactive Field Theory In Minkowski Space
- Lecture 48 - Causality, Sde In Minkowski Space
- Lecture 49 - Sde For Field Theory In Minkowski Space
- Lecture 50 - Spinor Fields Path Integral
- Lecture 51 - Gauge Fields - 1
- Lecture 52 - Gauge Fields - 2
- Lecture 53 - Ito Equation, Stock Price Modelling
- Lecture 54 - Financial Derivatives
- Lecture 55 - Properties Of Options
- Lecture 56 - Pricing Of Options
- Lecture 57 - Pricing Of Options
- Lecture 58 - Black Scholes Model
- Lecture 59 - Path Integral Solution Of Black Scholes Pde
- Lecture 60 - Misc Financial Applications Of Path Integrals