

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

NPTEL Video Course - Mathematics - NOC:Probabilistic Methods in PDE

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Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Prerequisite Measure Theory - Part 1
Lecture 2 - Prerequisite Measure Theory - Part 2
Lecture 3 - Prerequisite Measure Theory - Part 3
Lecture 4 - Random variable
Lecture 5 - Stochastic Process
Lecture 6 - Conditional Expectation
Lecture 7 - Preliminary for Stochastic Integration - Part 1
Lecture 8 - Preliminary for Stochastic Integration - Part 2
Lecture 9 - Definition and properties of Stochastic Integration - Part 1
Lecture 10 - Definition and properties of Stochastic Integration - Part 2
Lecture 11 - Further properties of Stochastic Integration
Lecture 12 - Extension of stochastic integral
Lecture 13 - change of variable formula and proof - Part 1
Lecture 14 - change of variable formula and proof - Part 2
Lecture 15 - Brownian motion as the building block
Lecture 16 - Brownian motion and its martingale property - Part 1
Lecture 17 - Brownian motion and its martingale property - Part 2
Lecture 18 - Application of Ito's rule on Ito process
Lecture 19 - Harmonic function and its properties
Lecture 20 - Maximum principle of harmonic function
Lecture 21 - Dirichlet Problem and bounded solution
Lecture 22 - Example of a Dirichlet problem
Lecture 23 - Regular points at the boundary
Lecture 24 - Zarembas cone condition for regularity
Lecture 25 - Summary of the Zaremba's cone condition
Lecture 26 - Continuity of candidate solution at regular points - Part 1
Lecture 27 - Continuity of candidate solution at regular points - Part 2
Lecture 28 - Summary of bounded solution to the Dirichlet Problem
Lecture 29 - Stochastic representation of bounded solution to a heat equation - Part 1

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- Lecture 30 - Stochastic representation of bounded solution to a heat equation - Part 2
- Lecture 31 - Uniqueness of solution to the heat equation
- Lecture 32 - Remark on Tychonoff's Theorem
- Lecture 33 - Widder's result and its extension on heat equation
- Lecture 34 - Solution to the mixed initial boundary value problem
- Lecture 35 - The Feynman-Kac formula
- Lecture 36 - Kac's theorem on the stochastic representation of solution to a second-order linear ODE - Part 1
- Lecture 37 - Kac's theorem on the stochastic representation of solution to a second-order linear ODE - Part 2
- Lecture 38 - Geometric Brownian motion
- Lecture 39 - A system of stochastic differential equations in application
- Lecture 40 - Brownian bridge
- Lecture 41 - Simulation of stochastic differential equations
- Lecture 42 - Stochastic differential equations
- Lecture 43 - Stochastic differential equations
- Lecture 44 - Stochastic differential equations
- Lecture 45 - Stochastic differential equations
- Lecture 46 - Stochastic differential equations
- Lecture 47 - Functional Stochastic Differential Equations
- Lecture 48 - Statement of Dirichlet and Cauchy problems with variable coefficients elliptic operators
- Lecture 49 - Cauchy Problem with variable coefficients
- Lecture 50 - Cauchy Problem with variable coefficients
- Lecture 51 - Semigroup of bounded linear operators on Banach space - Part 1
- Lecture 52 - Semigroup of bounded linear operators on Banach space - Part 2
- Lecture 53 - Growth property of C_0 semigroup
- Lecture 54 - Unique semigroup generated by a bounded linear operator
- Lecture 55 - Homogeneous initial value problem
- Lecture 56 - Mild solution to homogeneous initial value problem
- Lecture 57 - Mild solution to inhomogeneous initial value problem
- Lecture 58 - Sufficient condition for existence of classical solution of IVP
- Lecture 59 - Tutorial on Resolvent operator
- Lecture 60 - Feynman-Kac formula and the formula of variations of constants
- Lecture 61 - Non-autonomous evolution problem and mild/generalized solution
- Lecture 62 - Sufficient condition for existence of an evolution system
- Lecture 63 - Y -valued solution
- Lecture 64 - mild/generalized solution to Semi-linear Evolution Problem
- Lecture 65 - Existence of classical solution - Part 1
- Lecture 66 - Existence of classical solution - Part 2
- Lecture 67 - Conclusion video