NPTEL Video Course - Mathematics - NOC:Partial Differential Equations

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Co-ordinating Institute - IIT - Bombay

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Lecture 30 - Cauchy problem for Wave Equation in 3 space dimensions - Poisson-Kirchhoff formulae
Lecture 31 - Cauchy problem for Wave Equation in 2 space dimensions - Hadamard's method of descent
Lecture 32 - Nonhomogeneous Wave Equation - Duhamel principle
Lecture 33 - Wellposedness of Cauchy problem for Wave Equation
Lecture 34 - Wave Equation on an interval in? - Solution to an IBVP from first principles
Lecture 35 - Tutorial on IBVPs for wave equation
Lecture 36 - IBVP for Wave Equation - Separation of Variables Method
Lecture 37 - Tutorial on Separation of variables method for wave equation
Lecture 38 - Qualitative analysis of Wave equation - Parallelogram identity
Lecture 39 - Qualitative analysis of Wave equation - Domain of dependence, domain of influence
Lecture 40 - Qualitative analysis of Wave equation - Causality Principle, Finite speed of propagation
Lecture 41 - Qualitative analysis of Wave equation - Uniqueness by Energy method
Lecture 42 - Qualitative analysis of Wave equation - Huygens Principle
Lecture 43 - Qualitative analysis of Wave equation - Generalized solutions to Wave equation
Lecture 44 - Qualitative analysis of Wave equation - Propagation of waves
Lecture 45 - Laplace equation - Associated Boundary value problems
Lecture 46 - Laplace equation - Fundamental solution
Lecture 47 - Dirichlet BVP for Laplace equation - Green's function and Poisson's formula
Lecture 48 - Laplace equation - Weak maximum principle and its applications
Lecture 49 - Laplace equation - Dirichlet BVP on a disk in R2 for Laplace equations
Lecture 50 - Tutorial 1 on Laplace equation
Lecture 51 - Laplace equation - Mean value property
Lecture 52 - Laplace equation - More qualitative properties
Lecture 53 - Laplace equation - Strong Maximum Principle and Dirichlet Principle
Lecture 54 - Tutorial 2 on Laplace equation
Lecture 55 - Cauchy Problem for Heat Equation - 1
Lecture 56 - Cauchy Problem for Heat Equation - 2
Lecture 57 - IBVP for Heat equation Subtitle: Method of Separation of Variables
Lecture 58 - Maximum principle for heat equation
Lecture 59 - Tutorial on heat equation
Lecture 60 - Heat equation Subheading : Infinite speed of propagation, Energy, Backward Problem

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