Partial Differential Equations in Physics and Engineering

- Superposition
- Vibration of Strings and the Wave Equation
- The Method of Separation of Variables
- Solution of the 1-dimensional Wave Equation
- A Stretched String with Fixed Edges
- D'Alembert's Method
- The 1-Dimensional Heat Equation
- Steady-State Heat Problem
- Heat Conduction in a Bar: Fourier's Problem
- Two-Dimensional Wave Equation: Membrane
- Two-Dimensional Heat Equation: Rectangular Plate
- Laplace's Equation: Dirichlet Problem
- Poisson's Equation and Eigenfunction Expansions

Superposition

Vibration of Strings and the Wave Equation

- Free vibrations
- Forced vibrations
- Rectangular membrane

The Method of Separation of Variables

Solution of the 1-dimensional Wave Equation

A Stretched String with Fixed Edges

D’Alembert’s Method

The 1-Dimensional Heat Equation

Steady-State Heat Problem

Heat Conduction in a Bar: Fourier's Problem

Two-Dimensional Wave Equation: Membrane

Two-Dimensional Heat Equation: Rectangular Plate

Laplace's Equation: Dirichlet Problem

Poisson's Equation and Eigenfunction Expansions