

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

NPTEL Video Course - Physics - N0C:Theoretical Mechanics

Subject Co-ordinator - Dr. Charudatt Y. Kadolkar

Co-ordinating Institute - IIT - Guwahati

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

Lecture 1 - Introduction, Constraints
Lecture 2 - Generalized Coordinates, Configuration Space
Lecture 3 - Principle of Virtual Work
Lecture 4 - D'Alembert's Principle
Lecture 5 - Lagrange's Equations
Lecture 6 - Hamilton's Principle
Lecture 7 - Variational Calculus, Lagrange's Equations
Lecture 8 - Conservation Laws and Symmetries
Lecture 9 - Velocity Dependent Potentials, Non-holonomic Constraints
Lecture 10 - An Example
Lecture 11 - Phase Space
Lecture 12 - Legendre Transforms
Lecture 13 - Hamilton's Equations
Lecture 14 - Conservation Laws, Routh's procedure
Lecture 15 - An Example
Lecture 16 - Canonical Transformations
Lecture 17 - Symplectic Condition
Lecture 18 - Canonical Invariants, Harmonic Oscillator
Lecture 19 - Poisson Bracket Formulation
Lecture 20 - Infinitesimal Canonical Transformations
Lecture 21 - Symmetry Groups of Mechanical Systems
Lecture 22 - Hamilton Jacobi Theory
Lecture 23 - Action-Angle Variables
Lecture 24 - Separation of Variables and Examples
Lecture 25 - Continuous Systems and Fields
Lecture 26 - The Stress-Energy Tensor
Lecture 27 - Hamiltonian Formulation

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