NPTEL Video Course - Physics - NOC:Plasma Physics and Applications

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Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Introduction to Plasma - I
Lecture 2 - Introduction to Plasma - II
Lecture 3 - Plasma Oscillations
Lecture 4 - Debye Shielding
Lecture 5 - Debye Potential - I
Lecture 6 - Debye Potential - II
Lecture 7 - Debye Length and Plasma Criteria
Lecture 8 - More Aspects of Debye Shielding
Lecture 9 - Numerical Problems on Debye Shielding - I
Lecture 10 - Plasma as a Gas and Distribution of Velocities
Lecture 11 - Numerical Problems on Debye Shielding - II
Lecture 12 - Single-Particle Motion in Uniform Electric Field
Lecture 13 - Single-Particle Motion in Uniform Magnetic Field - I
Lecture 14 - Single-Particle Motion in Uniform Magnetic Field - II
Lecture 15 - Single-Particle Motion in Uniform Magnetic Field - III
Lecture 16 - Single-Particle Motion Under Uniform Magnetic field - IV
Lecture 17 - Motion in Perpendicular Electric and Magnetic fields - I
Lecture 18 - Motion in Perpendicular Electric and Magnetic fields - II
Lecture 19 - Gradient Drift
Lecture 20 - Gradient and Curvature Drifts
Lecture 21 - Vacuum Drift
Lecture 22 - Numerical Problems on Drifts
Lecture 23 - Magnetic Mirroring - I
Lecture 24 - Magnetic Mirroring - II
Lecture 25 - Magnetic Mirroring - III
Lecture 26 - Magnetic Mirroring - IV
Lecture 27 - Motion in Time Varying Magnetic Field - I
Lecture 28 - Motion in Time Varying Magnetic Field - II
Lecture 29 - Motion in Time Varying Electric field - I

Lecture 30 - Motion in Time Varying Electric field - II
Lecture 31 - Plasma as a Fluid: Equation of Continuity
Lecture 32 - Plasma as a Fluid: Fluid Equation - I
Lecture 33 - Plasma as a Fluid: Fluid Equation - II
Lecture 34 - Plasma as a fluid: Governing Equations
Lecture 35 - MHD Approximation - I
Lecture 36 - MHD Approximation - II
Lecture 37 - Plasma as a fluid: Electric and Magnetic Properties - I
Lecture 38 - Plasma as a fluid: Electric and Magnetic Properties - II
Lecture 39 - Plasma as a fluid: Fluid Drift - I
Lecture 40 - Plasma as a fluid: Fluid Drift - II
Lecture 41 - Magnetic Pressure
Lecture 42 - Wave in Plasma: Perturbation Theory
Lecture 43 - Wave in Plasma: Plasma Oscillation
Lecture 44 - Wave in Plasma: Dispersion Relation
Lecture 45 - Ion Acoustic Wave - I
Lecture 46 - Ion Acoustic Wave - II
Lecture 47 - Ion Acoustic Wave - III
Lecture 48 - Invalidity of Plasma Approximation - I
Lecture 49 - Invalidity of Plasma Approximation - II
Lecture 50 - Electromagnetic Waves in Plasma
Lecture 51 - Collisions and Diffusion in Plasma - I
Lecture 52 - Collisions and Diffusion in Plasma - II
Lecture 53 - Ambipolar Diffusion - I
Lecture 54 - Ambipolar Diffusion - II
Lecture 55 - Diffusion Equation
Lecture 56 - Diffusion in Presence of B - I
Lecture 57 - Diffusion in Presence of B - II
Lecture 58 - Instabilities in Plasma
Lecture 59 - Laser Produced Plasma and Pulsed Laser Deposited (PLD) Thin Film - I
Lecture 60 - Laser Produced Plasma and Pulsed Laser Deposited (PLD) Thin Film - II
Lecture 61 - Surface Modification of Metallic Components by Plasma Nitriding - I
Lecture 62 - Surface Modification of Metallic Components by Plasma Nitriding - II