

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

NPTEL Video Course - Physics - NOC:Statistical Mechanics (2021)

Subject Co-ordinator - Prof. Dipanjan Chakraborty

Co-ordinating Institute - IISER - Mohali

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

Lecture 1 - Introduction to Thermodynamics
Lecture 2 - Laws of Thermodynamics
Lecture 3 - Second Law of Thermodynamics and Heat Engines
Lecture 4 - Entropy, Clausius Inequality, Thermodynamic Processes and Systems
Lecture 5 - Extensivity of Entropy and Internal Energy, Gibbs Duhem relation
Lecture 6 - Exact and Inexact differentials, Legendre Transformation
Lecture 7 - Free Energy in Thermodynamics
Lecture 8 - Maxwell's relations - Part I
Lecture 9 - Maxwell's relations - Part II
Lecture 10 - Maxwell's relations - Part III
Lecture 11 - Response Functions and manipulating Partial Derivatives
Lecture 12 - Working With Thermodynamics
Lecture 13 - Joule Expansion and Joule Thomson Effect
Lecture 14 - Stability of Thermodynamic Potentials
Lecture 15 - Consequences of Stability of Thermodynamic Potentials
Lecture 16 - Conditions of Equilibrium and Gibbs Phase Rule
Lecture 17 - Introduction to Probability
Lecture 18 - Discrete and Continuous Distributions
Lecture 19 - Central Limit Theorem and Statistical Entropy
Lecture 20 - Classical Probability Density and Liouville Equation
Lecture 21 - Classical Probability Density, Ergodicity and Microcanonical Ensemble
Lecture 22 - Microcanonical Ensemble
Lecture 23 - Examples of Microcanonical Ensemble - Two Level System
Lecture 24 - Examples of Microcanonical Ensemble - Magnetic System and Ideal Gas - Part I
Lecture 25 - Examples of Microcanonical Ensemble - Magnetic System and Ideal Gas - Part II
Lecture 26 - Examples of Microcanonical Ensemble - Ultra-Relativistic Gas
Lecture 27 - Microcanonical Ultrarelativistic Gas and Quantum Solid
Lecture 28 - Microcanonical Excluded Volume
Lecture 29 - Canonical Ensemble

Get DIGIMAT For High-Speed Video Streaming of NPTEL and Educational Video Courses in LAN

<http://www.digimat.in>

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

Lecture 30 - Canonical Ensemble Paramagnet
Lecture 31 - Canonical Ensemble Ideal Gas
Lecture 32 - Canonical Ensemble Einstein Solid
Lecture 33 - Grand Canonical Ensemble
Lecture 34 - Grand Canonical Ensemble Ideal Gas - Part I
Lecture 35 - Grand Canonical Ensemble Ideal Gas - Part II
Lecture 36 - MicroCanonical to Canonical - Part I
Lecture 37 - MicroCanonical to Canonical - Part II
Lecture 38 - Interacting System - Part I
Lecture 39 - Interacting System - Part II
Lecture 40 - Van-Der Waals Equation of State
Lecture 41 - Quantum Statistical Mechanics Density Matrix
Lecture 42 - Density Matrix in different Ensembles
Lecture 43 - Free Particle Quantum Canonical Partition Function Free
Lecture 44 - Single Particle Quantum Partition Function Harmonic Oscillator - Part I
Lecture 45 - Single Particle Quantum Partition Function Harmonic Oscillator - Part II
Lecture 46 - Wigner Transformation
Lecture 47 - N-Particle partition function
Lecture 48 - Canonical Formulation of Ideal Gas
Lecture 49 - Grand Canonical Formulation of Ideal Gas
Lecture 50 - High Temperature Expansion
Lecture 51 - Degenerate Fermi Gas
Lecture 52 - Ideal Fermi Gas close to $T=0$, Chemical Potential and Specific Heat
Lecture 53 - Relativistic Fermi Gas at $T=0$
Lecture 54 - Ideal Bose Gas
Lecture 55 - Bose-Einstein Condensation
Lecture 56 - Pressure of an Ideal Bose Gas
Lecture 57 - Specific Heat of an Ideal Bose Gas - Part 1
Lecture 58 - Specific Heat of an Ideal Bose Gas - Part 2
Lecture 59 - Bose-Einstein Condensation in a Harmonically Trapped Bose Gas
Lecture 60 - Specific Heat of a Harmonically Trapped Bose Gas
Lecture 61 - General Treatment of a Bose gas - Part 1
Lecture 62 - General Treatment of a Bose gas - Part 2
Lecture 63 - Discontinuity in the Specific Heat of a Bose Gas - Part 1
Lecture 64 - Discontinuity in the Specific Heat of a Bose Gas - Part 2
Lecture 65 - Ultra Relativistic Bose Gas Stefan Boltzmann Law