

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

NPTEL Video Course - Physics - NOC:Quantum Technology and Quantum Phenomena in Macroscopic Systems

Subject Co-ordinator - Prof. Amarendra Kumar Sarma

Co-ordinating Institute - IIT - Guwahati

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

Lecture 1 - Introduction and Basic Quantum Mechanics

Lecture 2 - Problem Solving Session - 1

Lecture 3 - Two-level System - I

Lecture 4 - Bloch Sphere: Supplementary Lecture - I

Lecture 5 - Two-level Systems - II

Lecture 6 - Two-level Systems - III

Lecture 7 - Dressed States;Introduction to Density Matrix

Lecture 8 - Problem Solving Session - 2

Lecture 9 - Density-matrix formalism

Lecture 10 - Quantum Harmonic Oscillators

Lecture 11 - Quantization of Electromagnetic Radiation

Lecture 12 - Quantization of Standing EM Waves;Quantum States of Radiation Fields - I

Lecture 13 - Problem Solving Session - 3

Lecture 14 - Quantum States of Radiation Fields-II: Squeezed States

Lecture 15 - Problem Solving Session - 4

Lecture 16 - Introduction and Basics of Superconductivity

Lecture 17 - Cooper Pair Box as TLS;Introduction to Transmission Line

Lecture 18 - Quantization of Transmission Line - I

Lecture 19 - Quantization of Transmission Line - II

Lecture 20 - The Jaynes Cummings Model - I

Lecture 21 - Problem Solving Session - 5

Lecture 22 - The Jaynes Cummings Model - II

Lecture 23 - Josephson Junctions - I

Lecture 24 - Josephson Junctions - II

Lecture 25 - Problem Solving Session - 6

Lecture 26 - Transmon;Introduction to Dissipation in Quantum Systems

Lecture 27 - Quantum Master Equation

Lecture 28 - Pure dephasing and Dissipative Bloch Equations

Lecture 29 - Derivation of Fermi-Golden Rule

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

- Lecture 30 - Introduction to Cavity Optomechanics; Fabry-Perot Cavity
- Lecture 31 - Cavity Optomechanics: Basic Physics - I
- Lecture 32 - Problem Solving Session - 7
- Lecture 33 - Cavity Optomechanics: Basic Physics - II
- Lecture 34 - Classical Regime - I
- Lecture 35 - Classical Regime - II; Classical Langevin Equation
- Lecture 36 - Problem Solving Session - 8
- Lecture 37 - Langevin Equation
- Lecture 38 - Quantum Langevin Noise
- Lecture 39 - Problem Solving Session - 9
- Lecture 40 - Input-Output Relation
- Lecture 41 - Cavity Quantum Optomechanics
- Lecture 42 - Linearized Cavity Optomechanics; Ground state cooling
- Lecture 43 - Normal-Mode Splitting
- Lecture 44 - Quantum Optomechanics: Squeezed States