B. K. BIRLA COLLEGE OF ARTS, SCIENCE AND COMMERCE (AUTONOMOUS), KALYAN

CERTIFICATE COURSE



Advanced Quantum Mechanics with Applications

Week 1: Introduction to Quantum Physics, Postulates, Different representations.

Week 2: Density Matrix formalism, Harmonic Oscillator, Applications to coherent and squeezed states, spherically symmetric systems, Quantum dots.

Week 3: Spin angular momentum, Nuclear magnetic resonance.

Week 4: Quantum information theory, Entanglement, Shanon entropy.

Week 5: Quantum computing algorithms, EPR and Bell's paradox.

Week 6: Quantum dynamics, periodically driven systems.

Week 7: Approximation methods, perturbation theory, Variational and WKB approximation.

Week 8: Linear response theory, Kubo formula.





Advanced Quantum Mechanics with Applications

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Online Assignments 21.21/25 Proctored Exam

Total number of candidates certified in this course: **19**



Indian Institute of Technology Guwahati

Roll No: NPTEL22PH40S13220789



This certificate is awarded to **ANJANA KRISHNAN**

for successfully completing the course

| vith a consolidated score of | 60 | % |
|------------------------------|----|---|
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Jul-Sep 2022

(8 week course)

To validate the certificate





39/75



Prof. T. V. Bharat Head, Centre for Educational Technology NPTEL Coordinator, IIT Guwahati



No. of credits recommended: 2 or 3