School of Mathematics

Course 441 — Quantum Mechanics 1998-99
(JS Theoretical Physics, optional JS & SS Mathematics)

Lecturer: Dr. M.P. Fry

Requirements/prerequisites: 241

Duration: 21 weeks.

Number of lectures per week: 3

Assessment: Weekly problems

End-of-year Examination: One 3-hour examination

Description: The course begins with a survey of the foundations of quantum mechanics, using Dirac notation. It then proceeds to illustrative solutions of Schrödinger's equation, including bound-state problems, periodic potentials and scattering theory. This is followed by a study of symmetries, including displacements in time, spatial translations, rotations and angular momentum, reflections in space, and time reversal. Following this, stationary state and time-dependent perturbation theory are developed. Time permitting, Feynman's path-integral formulation of quantum mechanics will be discussed.
Objectives: The course aims to present the principles of quantum mechanics and to apply them to the physical world with the aid of weekly problem sets.
Textbooks: E. Merzbacher, *Quantum Mechanics 3rd Edition*, recommended among others.

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