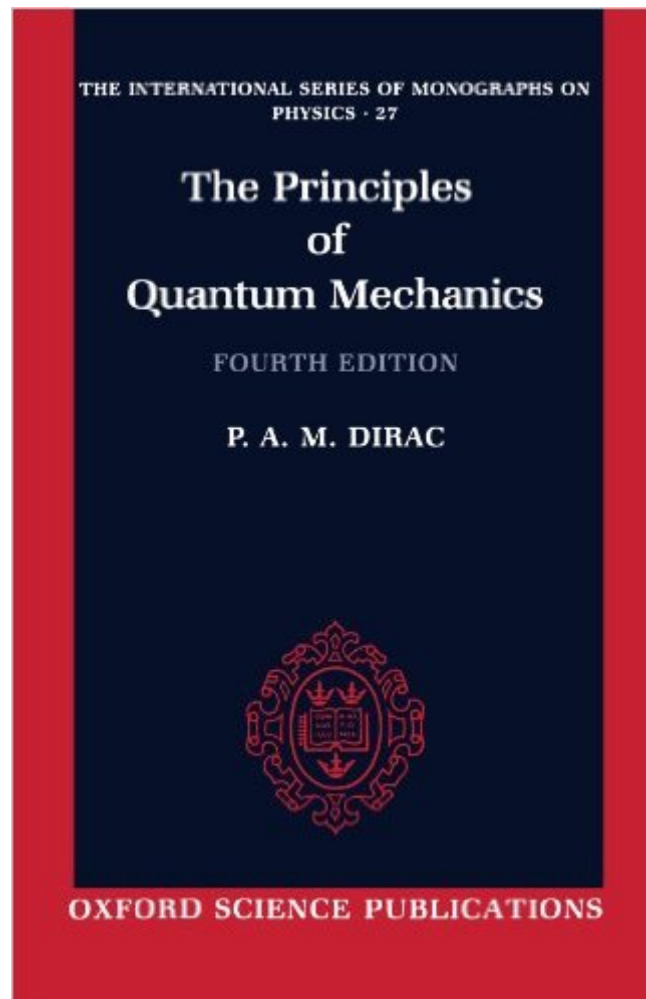


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The Principles Of Quantum Mechanics (International Series Of Monographs On Physics)



Synopsis

The first edition of this work appeared in 1930, and its originality won it immediate recognition as a classic of modern physical theory. The fourth edition has been bought out to meet a continued demand. Some improvements have been made, the main one being the complete rewriting of the chapter on quantum electrodynamics, to bring in electron-pair creation. This makes it suitable as an introduction to recent works on quantum field theories.

Book Information

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Customer Reviews

This book goes all the way back to 1930, the year it was first published, and a time when quantum physics was undergoing rapid development, both in terms of applications and theory. The author was one of the major contributors to these developments, and in this book has outlined his idiosyncratic approach to quantum physics, including relativistic quantum mechanics and quantum electrodynamics. The author's insight into quantum physics is extraordinary and that makes this book unique among the books on the subject. The author introduces immediately the principle of superposition as the tour-de-force of quantum theory in chapter 1 after discussing the inadequacy of classical mechanics in explaining the data on specific heat and atomic spectra. The polarization and interference of photons is used to motivate the principle of superposition, and then the concept of a quantum state. The famous Dirac bra-ket formalism is brought in to give the state concept a mathematical formulation. This is followed in chapter 2 by a mathematical formulation of observables, these being operators that act on the kets, with their adjoints operating on the bras.

The eigenvalues of these operators are then the physically realizable results of experiments. The author's discussion on the physical interpretation of this formalism is fascinating and should be read by anyone desiring an in-depth understanding of quantum physics. The formalism up to this point has been purely algebraic, so to apply it to physical problems one needs a representation. This is done in chapter 3, wherein the author also introduces the famous "Dirac delta function". The commutation relations between observables, not of course arising at all in the classical theory, are discussed in chapter 4.

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