1. Record Nr. UNINA9910254606503321

| | |
|---|---|
| Autore | Picasso Luigi E |
| Titolo | Lectures in Quantum Mechanics : A Two-Term Course / / by Luigi E. Picasso |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016 |
| ISBN | 3-319-22632-0 |
| Edizione | [1st ed. 2016.] |
| Descrizione fisica | 1 online resource (X, 354 p. 82 illus.) |
| Collana | UNITEXT for Physics, , 2198-7882 |
| Disciplina | 530.12 |
| Soggetti | Quantum theory<br>Gravitation<br>Particles (Nuclear physics)<br>Quantum field theory<br>Atoms<br>Physics<br>Quantum Physics<br>Classical and Quantum Gravitation, Relativity Theory<br>Elementary Particles, Quantum Field Theory<br>Atomic, Molecular, Optical and Plasma Physics |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Bibliographic Level Mode of Issuance: Monograph |
| Nota di contenuto | The Crisis of Classical Physics.- From Einstein to de Broglie -- Introduction to the Postulates of Quantum Mechanics -- The Postulates of Quantum Mechanics -- The Harmonic Oscillator -- Representation Theory -- Schrödinger Equation for One-Dimensional Systems -- One-Dimensional Systems -- Time-Evolution -- Angular Momentum -- Particle in a Central Force Field -- Perturbations to Energy Levels -- Electromagnetic Transitions -- Introduction to Atomic Physics -- Composite Systems. Pauli Principle -- Many-Electron Atoms.- The Paradoxes of Quantum Mechanics. |
| Sommario/riassunto | Based on a series of university lectures on nonrelativistic quantum mechanics, this textbook covers a wide range of topics, from the birth of quantum mechanics to the fine-structure levels of heavy atoms. The |

author sets out from the crisis in classical physics and explores the seminal ideas of Einstein, Bohr, and de Broglie and their vital importance for the development of quantum mechanics. There follows a bottom-up presentation of the postulates of quantum mechanics through real experiments (such as those of neutron interferometry), with consideration of their most important consequences, including applications in the field of atomic physics. A final chapter is devoted to the paradoxes of quantum mechanics, and particularly those aspects that are still open and hotly debated, to end up with a mention to Bell's theorem and Aspect's experiments. In presenting the principles of quantum mechanics in an inductive way, this book has already proved very popular with students in its Italian language version.
It complements the exercises and solutions book "Problems in Quantum Mechanics", by E. d'Emilio, L.E. Picasso (Springer).