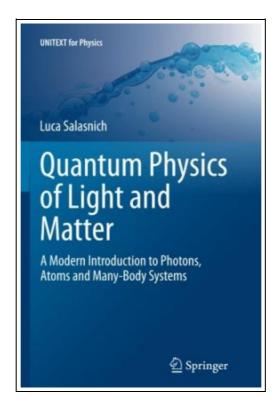
Quantum Physics of Light and Matter



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Reviews

The publication is fantastic and great. It can be rally exciting through reading period of time. I am just very happy to inform you that this is the greatest publication i actually have read in my very own daily life and could be he very best ebook for at any time. (Prof. Alvis Wuckert)

QUANTUM PHYSICS OF LIGHT AND MATTER



Condition: New. Publisher/Verlag: Springer, Berlin | A Modern Introduction to Photons, Atoms and Many-Body Systems | This book offers a concise introduction to the quantum field theory of light and non relativistic matter. It gives a detailed discussion of many-body techniques for electrons and ultra cold atoms as well as includes solved problems at the end of each chapter. | The book gives an introduction to the field quantization (second quantization) of light and matter with applications to atomic physics. The first chapter briefly reviews the origins of special relativity and quantum mechanics and the basic notions of quantum information theory and quantum statistical mechanics. The second chapter is devoted to the second quantization of the electromagnetic field, while the third chapter shows the consequences of the light field quantization in the description of electromagnetic transitions. In the fourth chapter it is analyzed the spin of the electron, and in particular its derivation from the Dirac equation, while the fifth chapter investigates the effects of external electric and magnetic fields on the atomic spectra (Stark and Zeeman effects). The sixth chapter describes the properties of systems composed by many interacting identical particles by introducing the Hartree-Fock variational method, the density functional theory and the Born-Oppenheimer approximation. Finally, in the seventh chapter it is explained the second quantization of the non-relativistic matter field, i.e. the Schrodinger field, which gives a powerful tool for the investigation of many-body problems and also atomic quantum optics. At the end of each chapter there are several solved problems which can help the students to put into practice the things they learned. | The Origins of Modern Physics.- Special Relativity.- Quantum Mechanics.- Axioms of Quantum Mechanics.- Quantum Information.- Quantum Statistical Mechanics.- Microcanonical Ensemble.- Canonical ensemble.- Grand canonical ensemble Solved Problems.-Second Quantization of Lig



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