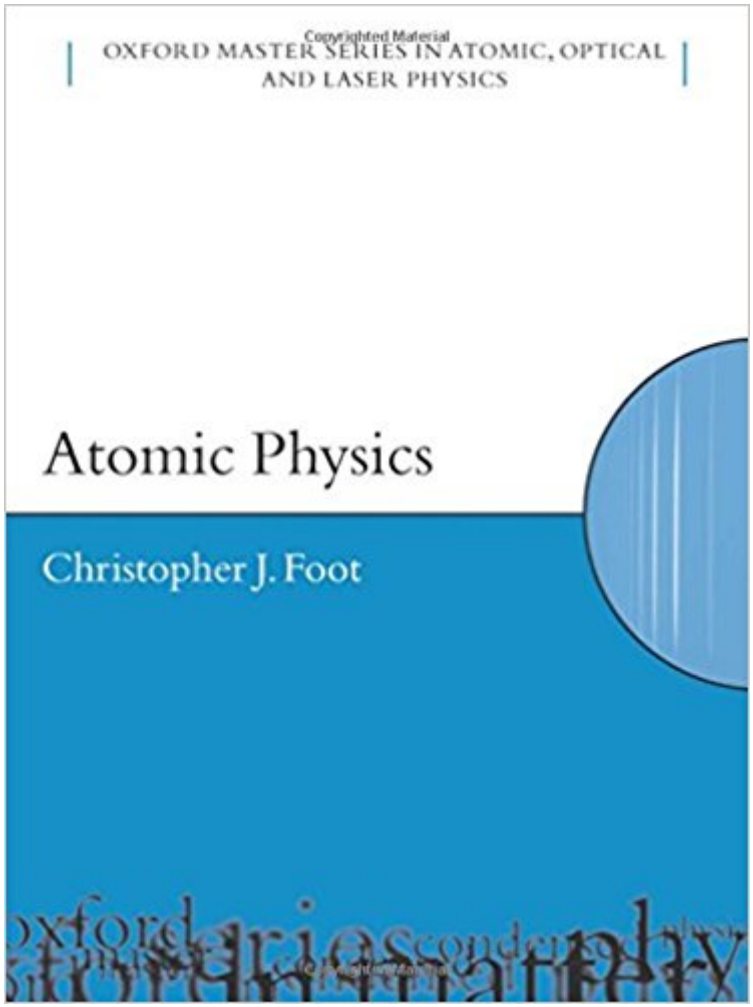
Atomic Physics (Oxford Master Series In Physics)



Synopsis

This text will thoroughly update the existing literature on atomic physics. Intended to accompany an advanced undergraduate course in atomic physics, the book will lead the students up to the latest advances and the applications to Bose-Einstein Condensation of atoms, matter-wave inter-ferometry and quantum computing with trapped ions. The elementary atomic physics covered in the early chapters should be accessible to undergraduates when they are first introduced to the subject. To complement the usual quantum mechanical treatment of atomic structure the book strongly emphasizes the experimental basis of the subject, especially in the later chapters. It includes ample tutorial material (examples, illustrations, chapter summaries, graded problem sets).

Book Information

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Customer Reviews

"An altogether useful, enjoyable book that can be used a resource, course text, and introduction to modern atomic research topics."--CHOICE"Foot presents a textbook for an undergraduate course in atomic physics for students who understand quantum mechanics at the level of an introductory university course, including the SchrÃ¶dinger equation in three dimensions and perturbation theory. After describing the basic principles of atomic structures and reviewing the classical ideas, he discusses laser spectroscopy, laser cooling, the Bose-Einstein condensation of dilute atomic vapors, matter-wave interferometry, and ion trapping."--SciTech Book News

C.J. Foot was a Junior Research Fellow of Jesus College in Oxford 1984-86, as well as being awarded the Lindemann Trust Fellowship at Stanford University 1984-85 and the Royal Society University Research Fellowship 1986-1991. In 1991, he became a university lecturer and was awarded the title of Professor of physics in 2002. He won the National Physical Laboratory Metrology Award in 1990.

This has the same problem as Introduction to Plasma by Chen where the text is printed too close to the spine. The reason print exists is so that you can read words on flat sheets of paper, instead of having to crane your neck to see what’s on the other side.

A very useful reference text for advanced undergraduate or higher atomic physics. It moves rather quickly and assumes prior knowledge of quantum mechanics, but provides a lot of good information on modern experimental techniques.

Well written. Requires knowledge of basic physics.

it’s good

This book has two types of material; both well done. The first could have been written decades ago, and is the "traditional" atomic physics. Where you start with the hydrogen atom, and investigate its spectroscopy with the Schrodinger equation. Then the book takes the next logical step by going to helium and thence to heavier atoms. LS and JJ coupling and other refinements. Such material is now quite well known and you need this for a solid background.But the book also has much more recent material. On quantum computing using qubits. These attempt to use the quantum states of small groups of atoms, to perform computations fundamentally different from current digital efforts. Enough detail is given for you to appreciate the severe experimental travails of the field, and how much more remains to be done, if qubits are ever to become useful.

I used the book for a course on semiclassical interaction matter-radiation (chapters 7-10), and I found it quite bad. It often lacks rigour, hiding under colloquial explanations a fundamentally superficial approach. It never reaches a deep comprehension of the Physics involved: the discussion of BE condensation, for instance, is simply non-sense. I leafed through the first chapters and I found them sloppy too. Maybe useful for experimentalists for the several experimental

techniques explained, but other sourches are recommended.

Atomic Physics (Oxford Master Series in Physics) Chaos in Atomic Physics (Cambridge Monographs on Atomic, Molecular and Chemical Physics) Structure and Dynamics: An Atomic View of Materials (Oxford Master Series in Physics) The Atomic Sea: Part Seven: The Atomic Jungle Fundamental Aspects of Plasma Chemical Physics: Transport (Springer Series on Atomic, Optical, and Plasma Physics) Atomic and Molecular Radiation Physics (Wiley Monographs on Chemical Physics) The Solid State: An Introduction to the Physics of Crystals for Students of Physics, Materials Science, and Engineering (Oxford Physics Series) Oxford Handbook of Political Psychology (Oxford Handbooks) published by Oxford University Press, USA (2003) Quantum Entanglement in Electron Optics: Generation, Characterization, and Applications (Springer Series on Atomic, Optical, and Plasma Physics) Atomic Spectra and Radiative Transitions (Springer Series in Chemical Physics, Vol. 1) Statistical Mechanics: Entropy, Order Parameters and Complexity (Oxford Master Series in Physics) Kinetic Theory and Transport Phenomena (Oxford Master Series in Physics) Soft Condensed Matter (Oxford Master Series in Condensed Matter Physics, Vol. 6) Band Theory and Electronic Properties of Solids (Oxford Master Series in Physics) Optical Properties of Solids (Oxford Master Series in Physics) Magnetism in Condensed Matter (Oxford Master Series in Physics) Relativity, Gravitation and Cosmology: A Basic Introduction (Oxford Master Series in Physics) Superconductivity, Superfluids, and Condensates (Oxford Master Series in Physics) Quantum Confined Laser Devices: Optical gain and recombination in semiconductors (Oxford Master Series in Physics) Master Planning Success Stories: How Business Owners Used Master Planning to Achieve Business, Financial, and Life Goals (The Master Plan Book 2)