

Atomic Physics: An Exploration through Problems and Solutions

By Dmitry Budker, Derek F. Kimball, David P. DeMille

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This book is intended for advanced undergraduate, graduate students and researchers who are interested in Atomic, Molecular and Optical (AMO) Physics. Written as a collection of problems, hints and solutions, the book will provide help in learning about both fundamental and applied aspects of this vast field of knowledge, where rapid and exciting developments are currently taking place. The authors tough upon a broad spectrum of phenomena and techniques and adopt an experimentalist's approach, by avoiding formal calculations whenever possible in favor of "back-of-the-envelope" estimates, symmetry arguments and physical analogies. While complete coverage of all AMO Physics is not attempted, there are chapters on atomic structure, behavior of atoms and molecules in external electromagnetic fields, atomic collisions and experimental techniques. Special attention is given to a discussion of ideas and experimental methods in several "hot areas", a few of these being cold atoms and Bose-Einstein condensates, tests of fundamental symmetries, atomic magnetometers and frequency comb metrology with ultra-short laser pulses.

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Review

"A physics book that is a pleasure to read."--*Choice*

"Budker (physics, University of California-Berkeley) provides problems and solutions to reinforce fundamental and applied aspects of atomic, molecular, and optical (AMO) physics. Intended for advanced undergraduates, graduate students, and researchers, the book touches on a broad spectrum of phenomena and techniques and adopts an experimentalist's approach by avoiding formal calculations whenever possible in favor of estimates, symmetry arguments, and physical analogies."--*SciTech Book News*

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