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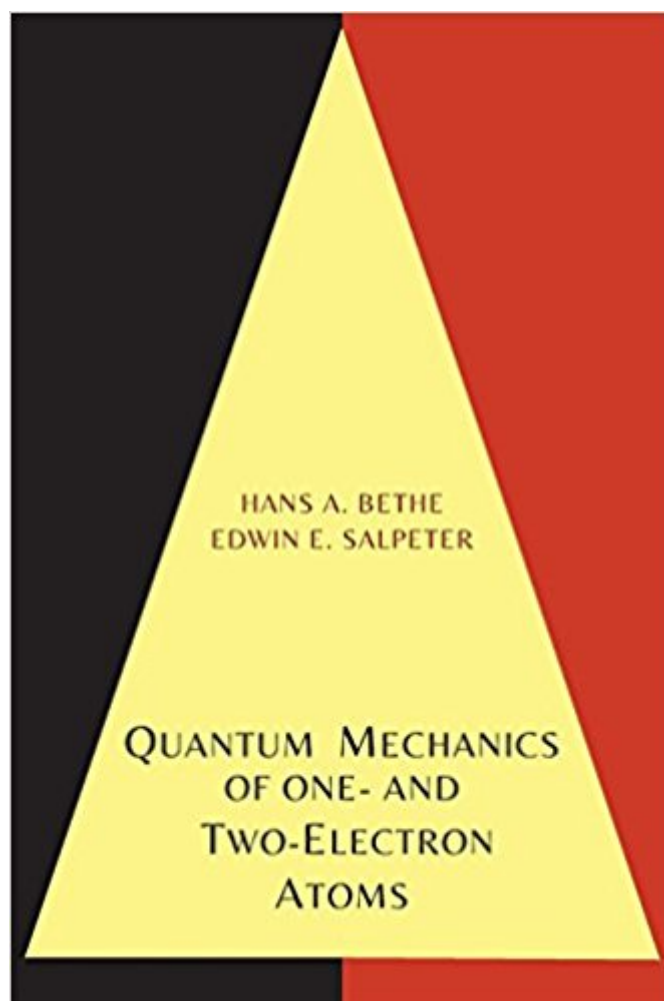# Quantum Mechanics Of One- And Two-Electron Atoms

HANS A. BETHE
EDWIN E. SALPETER

QUANTUM MECHANICS
OF ONE- AND
TWO-ELECTRON
ATOMS

Synopsis

2014 Reprint of 1957 Edition. Full facsimile of the original edition, not reproduced with Optical Recognition Software. This classic of modern physics includes a vast array of approximation methods, mathematical tricks, and physical pictures that are also useful in the application of quantum mechanics to other fields. Students and professionals should find it an essential reference for calculations pertaining to hydrogen-like and helium-like atoms and their comparison with experimental results. In-depth explorations of the Dirac theory of the electron and of radiative effects include brief accounts of relevant experiments. The specific application of general field-theoretic results to atomic systems also receives a thorough examination. Author Hans A. Bethe (1906-2005), Professor of Physics at Cornell University, won the Nobel Prize in Physics in 1967. Co-author Edwin E. Salpeter is James Gilbert White Distinguished Professor of the Physical Sciences at Cornell University.

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Customer Reviews

The late Hans A. Bethe, a Nobel Laureate, was Professor of Physics at Cornell University. Edwin E. Salpeter is James Gilbert White Distinguished Professor of the Physical Sciences at Cornell University. --This text refers to an out of print or unavailable edition of this title.

I recently started working on some atomic physics projects and needed to buy some books to familiarize myself with the field. I bought several books and now think there are only two books you should initially buy. Hans Bethe's book is a definite must, and if you need to know more about

computation and many-body techniques, then get Walter Johnson's book too.Bethe's book is mathematical. At times it can become overwhelming but if you truly need to know how to derive something, it is in there. But it's not like Jackson's EM book. For one, Bethe's book has regular discussions on what is the physics behind all the math and why intuitively one should expect that. There are also many diagrams and figures which explain many of the phenomena that are discussed.Foremost, this is a book you can learn atomic physics from and actually understand it. As an example, I was reading about solving the Hydrogen atom in parabolic coordinates. Why on earth? Turns out that parabolic coordinates are well suited when a direction in space is preferred in a problem (i.e. an atom in an electric field). Five minutes of reading and you learn something.This is a graduate level book. If you are pre-comps/quals this will serve as a valuable book for the physics discussions alone. If you have a Phd, you will love the clarity of the ideas as well as the rigor provided. For a few bucks, you can't go wrong with this purchase.

This book was used in my thesis. Really happy to have a copy for reference purposes. Part of a company library. Only signed out once.

What a delight to see this book in print again-especially at such a resonable price.This book is the classic exposition on atoms-both theory and practice as of 1977 (myreview is actually from my 1957 copy). Do not be mislead by the seeming restrictionto 1 and 2 electron atoms. The work applies to atoms of any number of electrons. Whileit will be missing modern work done on relativistic and correlation effects in atoms(much of which was done after 1977),and modern experimental techniques(lasers,coolingof atoms,etc),the serious student or researcher in atomic physics must have knowledgeand command of this material. The writing style is very clear and very careful,andeven the footnotes are a delight (and also relevant today).

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