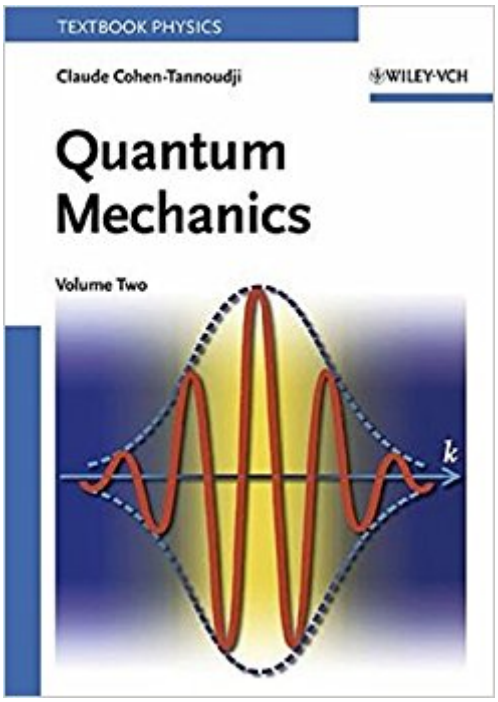
Quantum Mechanics, Volume 2



Synopsis

Beginning students of quantum mechanics frequently experience difficulties separating essential underlying principles from the specific examples to which these principles have been historically applied. Nobel-Prize-winner Claude Cohen-Tannoudji and his colleagues have written this book to eliminate precisely these difficulties. Fourteen chapters provide a clarity of organization, careful attention to pedagogical details, and a wealth of topics and examples which make this work a textbook as well as a timeless reference, allowing to tailor courses to meet students' specific needs. Each chapter starts with a clear exposition of the problem which is then treated, and logically develops the physical and mathematical concept. These chapters emphasize the underlying principles of the material, undiluted by extensive references to applications and practical examples which are put into complementary sections. The book begins with a qualitative introduction to quantum mechanical ideas using simple optical analogies and continues with a systematic and thorough presentation of the mathematical tools and postulates of quantum mechanics as well as a discussion of their physical content. Applications follow, starting with the simplest ones like e.g. the harmonic oscillator, and becoming gradually more complicated (the hydrogen atom, approximation methods, etc.). The complementary sections each expand this basic knowledge, supplying a wide range of applications and related topics as well as detailed expositions of a large number of special problems and more advanced topics, integrated as an essential portion of the text.

Book Information

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Customer Reviews

Beginning students of quantum mechanics frequently have difficulty separating essential underlying

principles from the specific examples to which these principles have historically been applied. This book is especially designed to eliminate that difficulty. Fourteen chapters, augmented by 14 "complementary sections," provide a clarity of organization, careful attention to pedagogical details, and a wealth of topics and examples that allow physics professors to tailor courses to meet students' specific needs. Each chapter starts with a clear exposition of the problem to be treated and then logically develops the physical and mathematical concept. These chapters emphasize the underlying principles of the material, undiluted by extensive references to applications and practical examples. (Such applications and practical examples are contained in the complementary sections.) The book begins with a qualitative introduction to quantum mechanical ideas using simple optical analogies and continues with a systematic presentation of the mathematical tools and postulates of quantum mechanics as well as a discussion of their physical content. Applications follow, starting with the simplest ones (two-level systems, the harmonic oscillator, etc.), and becoming gradually more complicated (the hydrogen atom, approximation methods, etc.). The complementary sections each expand this basic knowledge, supplying a wide range of applications and related topics which make use of the essential skills. Here the authors include carefully written, detailed expositions of a large number of special problems and more advanced topics-integrated as an essential portion of the text. These topics, however, are not interdependent; this allows professors to direct their quantum mechanics courses toward both physics and chemistry students.

Claude Cohen-Tannoudji, born in Constantine (Algeria) in 1933, studied at the Ã Â¿Â cole Normale SupÃ Â¿Â rieure in Paris, where he received a postdoctoral lecture qualification in 1962. In 1973 he was accepted at the CollÃ Â¿Â ge de France, and in 1981 became a member of the Academy of Sciences. In 1997, Claude Cohen-Tannoudji was awarded the Nobel Prize in Physics for his research on laser cooling of neutral atoms (together with Steven Chu and William D. Phillips). The method is relevant for the development of precise atomic clocks, which are used for positioning and navigation. His is currently affiliated to the Laboratoire de Physique at the Ã Â¿Â cole Normale SupÃ Â¿Â rieure (Paris). His textbook on quantum mechanics, written together with Bernard Diu und Franck LaloÃ Â¿Â , is one of the best-known timeless standard references in this field and is recommended on a regular basis by lecturers of undergraduate courses.

This is by far my favorite quantum mechanics textbook. I would not suggest it as a first exposure to quantum mechanics textbook. For those purposes I would suggest griffiths, he is excellent at progressively lying less to the reader as he/she progresses. This book however, presents that

subject material in full form and in great detail. I constantly reference back to this book and the other volume.

We used this book in my undergraduate Quantum 2 class this semester. In quantum 1 we used Griffiths, a solid book. So we changed teachers, and thus books, to this one.It's terrible.If I had already learned the material in the book, this book would be a great reference book. But if you haven't learned the material, this book won't help. It's so cut and dry, very technical. What took the cake for me is that it constantly refers to things worked out in Volume 1. I don't have Volume 1.If you are looking to teach yourself the material, or find a supplementary textbook, I would not recommend buying this book.

I like this book, because it is very large. You don't want a thin quantum mechanics book, because its thinness means that the authors skipped a ton of details.

This book was given as a gift for my son in graduate school. He needed the book. It's just what he needed.

After years of searching for a really good book on non-relativistic quantum mechanics, I found it in this book. The beginning student can easily understand it and it's comprehensiveness will appeal to the more advanced student. It's use of the Dirac notation makes for a clean and concise treatment. The book is FAR better than most other quantum mechanics books found in university libraries, in my opinion.

If you are fed up with QM books that bury you under tons of formulas from page one to the end, and who are written by authors who seem to hide their own ignorance of QM behind the equations, get this book and its first volume. Without any doubts, one of the best AND clearest books on QM, with mathematics used wisely.

Written by one of the most proeminent physicists in quantum optics, this book shows, besides hiscompetence, his very high level of didactic.The problems are well-choosen and there are plenty of examples to make everything clear. It's worth to have it!

Use of the Dirac notation allows a clean and concise treatment. The book makes QM easy to

understand, and it is comprehensive.

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