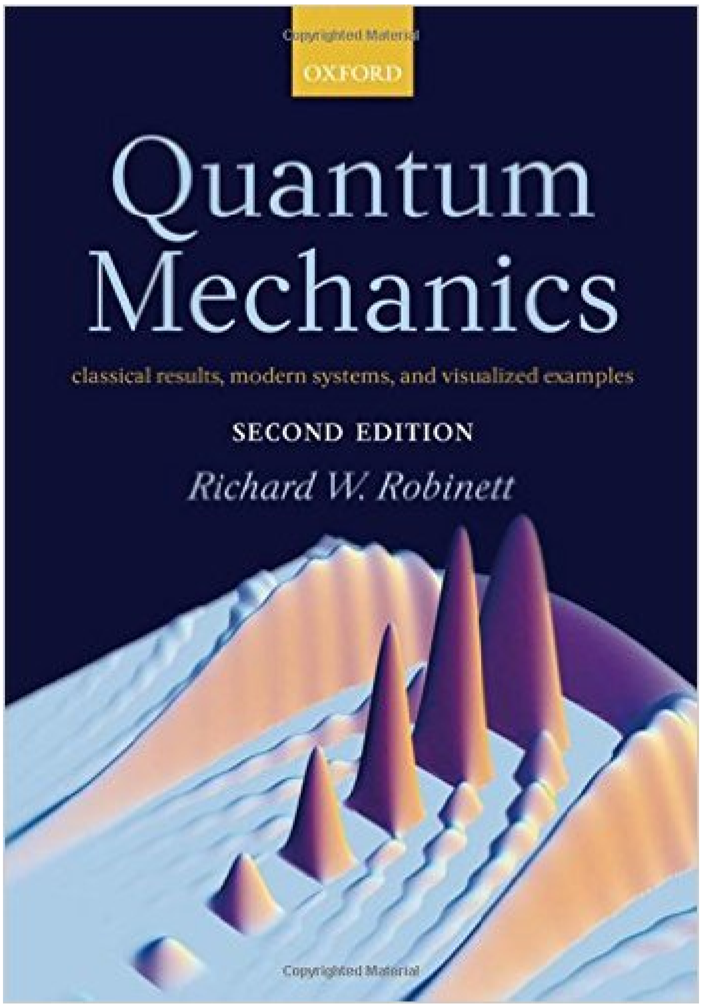
Quantum Mechanics: Classical Results, Modern Systems, And Visualized Examples



Synopsis

Quantum Mechanics: Classical Results, Modern Systems, and Visualized Examples is a comprehensive introduction to non-relativistic quantum mechanics for advanced undergraduate students in physics and related fields. It provides students with a strong conceptual background in the most important theoretical aspects of quantum mechanics, extensive experience with the mathematical tools required to solve problems, the opportunity to use quantum ideas to confront modern experimental realizations of quantum systems, and numerous visualizations of quantum concepts and phenomena. Changes from the First Edition include many new discussions of modern quantum systems (such as Bose-Einstein condensates, the quantum Hall effect, and wave packet revivals) all in the context of familiar textbook level examples. The book continues to emphasize the many connections to classical mechanics and wave physics to help students use their existing intuition to better learn new quantum concepts.

Book Information

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Customer Reviews

This is only intro level quantum mechanics book that I have seen that really makes an attempt to get to the heart of the matter of quantum mechanics and its connections to classical physics. The notion of breaking the subject down by dimensionality of the problems is certainly unique and creative. The book covers a wide range of topics ranging from quantum gravity to chaos. Derivations are presented in a clear and readable way. Moreover, the problems are really fun and interesting. My ONLY reservation is that what *I* really like about the book, first time students would probably hate!

However, for a course aimed at theoretical students in physics or in chemistry, this would be a hit.

Robinett's book is a comprehensive is somewhat mathematical treatment of the fundamental aspects of this fascinating subject.Among the things most pleasing about the book are:1. A constant connection with classical physics principles;2. An early introduction to and development of the wave packet and operators and a physical interpretation of Schrodinger's equation;3. A comprehensive discussion of various QM models in both their mathematical and physical aspects: the infinite well and other 1-D potentials, SHO, scattering;4. Two-D and Three-D QM and the development of the Hydrogen atom;5. Development of Gravity and QM;6. An abundance of examples, many based on experimental results for the student to try out.The mathematics is clear, and unlike many other books, the author takes the trouble to present many of the intermediate steps. I should say, however, that there are quite a few TYPOS sprinkled throughout the text. They are only a minor distraction and if anything, finding and fixing them can be a useful learning experience! My criticsm would be that the sections on the physical and mathematical development of Spin is too short. Indeed, the Stern-Gerlach and associated gedanken experiments which are so fundamental to an understanding of the postulates of QM do not get much of a mention.Having said this, the book is certainly a good introduction to the subject. It complements other traditional texts like French and Taylor quite well.

I have been much impressed by Robinett's introduction to quantum mechanics. He seriously attempts to teach the principles of the subject, and does so with considerable effect. His quasi-derivation of the Schroedinger equation is notable.I have used this twice in introductory quantum mechanics courses. Some students were vocal in their dislike of the book. However they seemed to have learned quite a bit from it. Given the adverse comments to be found about all other books in physics on the negative comments inspire contempt rather than respect. If Robinett errs, it is in attempting to teach Qm rather than in pounding formulae into students.

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