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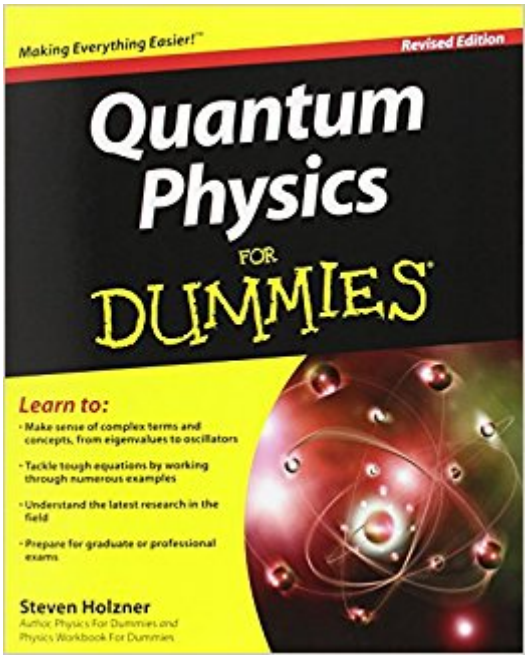
Quantum Physics For Dummies



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Synopsis

Quantum Physics For Dummies, Revised Edition helps make quantum physics understandable and accessible. From what quantum physics can do for the world to understanding hydrogen atoms, readers will get complete coverage of the subject, along with numerous examples to help them tackle the tough equations. Compatible with classroom text books and courses, Quantum Physics For Dummies, Revised Edition lets students study at their own paces and helps them prepare for graduate or professional exams. Coverage includes: The Schrodinger Equation and its Applications The Foundations of Quantum Physics Vector Notation Spin Scattering Theory, Angular Momentum, and more Your plain-English guide to understanding and working with the micro world Quantum physics â ” also called quantum mechanics or quantum field theory â ” can be daunting for even the most dedicated student or enthusiast of science, math, or physics. This friendly, concise guide makes this challenging subject understandable and accessible, from atoms to particles to gases and beyond. Plus, it’s packed with fully explained examples to help you tackle the tricky equations like a pro! Compatible with any classroom course â ” study at your own pace and prepare for graduate or professional exams Your journey begins here â ” understand what quantum physics is and what kinds of problems it can solve Know the basic math â ” from state vectors to quantum matrix manipulations, get the foundation you need to proceed Put quantum physics to work â ” make sense of SchrÃ¶dinger’s equation and handle particles bound in square wells and harmonic oscillators Solve problems in three dimensions â ” use the full operators to handle wave functions and eigenvectors to find the natural wave functions of a system Discover the latest research â ” learn the cutting-edge quantum physics theories that aim to explain the universe itself

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Customer Reviews

Just the title alone makes me chuckle: Quantum Physics for Dummies. "Dummies" do not do quantum physics. Quantum Physics for the uninitiated is a more accurate title. If you are searching for a simplified, non-technical layman's introduction to quantum physics, this is not it. The problem with learning quantum physics is that by its very nature it is a strange, rather arcane and counter-intuitive subject whose most famous illustrative experiments are easily described. Many who approach the subject have already heard of the famous two slit experiment, or the Schrodinger's Cat thought experiment, with their well known suggestions that the observer alters the nature of reality. But quantum physics is the most successful predictive scientific theory in history and that is due to its carefully constructed mathematical structure. Much of the mathematics involved in quantum theory at its foundational or ground-state level involves the manipulation of matrices, vectors and brackets (bras and kets): utilizing what is called Dirac notation, after the great English physicist Paul Dirac. This is not difficult mathematics, but it is technical and occasionally tedious. It is also absolutely necessary if one is to adequately explain what is going on under the hood.This is essentially the level of mathematics (along with partial differential equations) utilized in this excellent under-graduate level introduction to the subject. It is not a text book or a workbook but an extended monograph with illustrative solved problems. After a brief historical overview the book explains Dirac Notation, then it introduces eigenvectors and eigenvalues and bound state particles.

This is NOT the book for someone who is just interested in the concepts of modern physics - someone who likes a book focusing on the "gee wiz" aspects of amazing concepts, but without the math. The author is clear that this book is for:- those taking a college course in quantum physics- those with some mathematical prowess - a knowledge of calculus and an understanding of Hilbert Space- those with some physics backgroundI believe that this book is wholly inappropriate for someone who lacks the required prerequisites (i.e., one-star). I would rate it four stars for someone taking a quantum physics course that would like a book that discusses many of the basic quantum physics problems. I consider myself somewhere in between these two extremes, so for me it was a three-star book.While I am not now taking a college course in quantum physics, as a metallurgical engineer I did take some many years ago and I do have a reasonable background in mathematics and physics. I was thus interested in this book to bring me up to speed and refresh my knowledge. However, I not think that it succeed in this, as it was much too sketchy to meet my need for a stand-alone text. I think that this book is best as an adjunct to a more conventional text on quantum physics. My three-star rating is based on my background and on how I felt about the book.What is in

the book?The book begins with 16 pages devoted to the essentials of quantum physics, covering everything from Planck’s description of black body radiation, Einstein’s analysis of the photo-electric effect, the idea of positrons, de Broglie’s description of matter as a wave, the Compton effect and Heisenberg’s Uncertainty Principle.

This book angered me. I selected it for review in the hope that some great physics teacher had finally made the effort to communicate the magical ideas of quantum theory to intelligent but mathematically untrained lay people. No such luck. The book is just one more of the hundreds of quantum physics texts out there. The author appears to simply have taken his notes from the last senior level quantum theory course he taught, thrown them into the yellow cover with a few "clever" chapter titles ("getting down and dirty with spin and eigenstates") and then had the nerve to advertise it as "making everything easier." It does not make anything easier. The reader cannot possibly understand this text without a full background in mathematics of partial differential equations, spherical harmonics, matrices, Hilbert space - exactly what the lay public does not have. And oh yes, you will need to know the Java programming language for certain exercises! Just read the other reviews here on to see the disappointment of readers who were tricked into buying it.The "For Dummies" series originated in the 1980’s with books on computer technology for an intelligent but untrained public who felt overwhelmed by the in-speak of the computer cult; they longed to have someone explain things to them in plain English. The idea caught on well - so well that it is now simply a brand under the publishing giant J. Wiley, which cynically slaps the "Dummies" label on every new reference book they publish; the series now has 1800+ titles including such zingers as "Overcoming Binge Eating for Dummies." "For Dummies" is now a meaningless marketing gimmick.

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