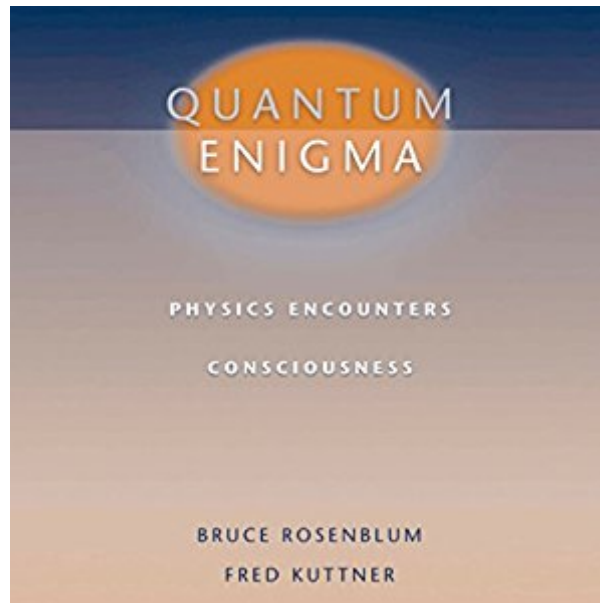




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Quantum Enigma: Physics Encounters Consciousness



Synopsis

In trying to understand the atom, physicists built quantum mechanics, the most successful theory in science and the basis of one-third of our economy. They found, to their embarrassment, that with their theory, physics encounters consciousness. Authors Bruce Rosenblum and Fred Kuttner explain all this in nontechnical terms, with help from some fanciful stories and anecdotes about the theory's developers. They present the quantum mystery honestly, emphasizing what is and what is not speculation. Quantum Enigma's description of the experimental quantum facts and the quantum theory explaining them is undisputed. Interpreting what it all means, however, is heatedly controversial. But every interpretation of quantum physics involves consciousness. Rosenblum and Kuttner therefore turn to exploring consciousness itself - and encounter quantum mechanics. Free will and anthropic principles become crucial issues, and the connection of consciousness with the cosmos suggested by some leading quantum cosmologists is mind blowing. Listeners are brought to a boundary where the particular expertise of physicists is no longer the only sure guide. They will find instead the facts and hints provided by quantum mechanics and the ability to speculate for themselves. In the few decades since the Bell's theorem experiments established the existence of entanglement (Einstein's spooky action), interest in the foundations and the mysteries of quantum mechanics has accelerated. In recent years, physicists, philosophers, computer engineers, and even biologists have expanded our realization of the significance of quantum phenomena. This second edition includes such advances. The authors have also drawn on many responses from readers and instructors to improve the clarity of the book's explanations.

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Customer Reviews

I am a theoretical physicist but I must admit I did not fully appreciate the Quantum Enigma until I read the first edition of this book a few years ago. I first learned quantum mechanics over 40 years ago and have actively practiced it. That is, I used it to calculate theoretical predictions. It was only in the last 10 years or so that I asked myself, "What is the electron actually doing when light is emitted from an hydrogen atom?" After reading this book I realized the answer is, "Nobody has the slightest idea!" Fully appreciating the vast gap between the "classical" world we live in and the "quantum world" took some time for me. That kind of profound ignorance takes time to appreciate. I now better understand what I have read in biographical books about Bohr, Einstein, Heisenberg, and Schrodinger. As the realization slowly set in as to what quantum mechanics was saying, these men and other physicists struggled with each other in an almost religious battle. Now over 80 years later we know no more than we did then. In the end, everyone has to come to appreciate the profound ignorance we have at this point in history. For any interested layman or scientist, the Quantum Enigma is a must-read item.

No theory in history has been so absolutely precise and predictive as QM. QM, however, is fundamentally not like other science. If you consider that clocks slow down in a spaceship travelling at the speed of light enough times, you will eventually come to understand relativity such that the matter is settled and understood. QM, for all the precision it represents in the material world cannot avoid the measurement problem represented by the experiment observer. The observation of the collapse of the wave function requires a living human mind. The authors are physicists that chose to lecture non-technical students. On first thought, they might be presumed to have drawn the short straw. After reading Quantum Enigma, they chose to address QM to the much larger domain of the intelligent but non-mathematically oriented community. Other more technical tomes exist in abundance and they will begin with the legacy of dead physicists, introduce you to the double-slit experiment and Schrodinger's horrific cat and then out into the limits of the science. What makes Quantum Enigma curious in the QM genre is that it too begins with the narratives of long dead physicists including an excellent summary of the great debates between Einstein & Bohr. They then integrate the mentor/protégé relationship of Schrodinger & Heisenberg who introduce the horrific cat in the box thought experiment and they provide just enough descriptive physics to understand the nature of QM. Then ... they revisit the cat. Quantum Enigma is not QM for dummies. It is every bit as rigorous and reader challenging as any QM material in print. It accomplishes that objective by attending to the non-material implications of QM and the skeleton in the closet. The measurement problem is offered up for consideration. Consciousness is central to QM. Your

preference to enjoy or discard Quantum Enigma will pivot on this single implication. The quote from astrophysicist Martin Rees sums up the quantum enigma that Rosenblum & Kuttner address quite well: "In the beginning there were only probabilities. The universe could only come into existence if someone observed it. It does not matter that the observers turned up several billion years later. The universe exists because we are aware of it."

This book gives a wonderful historical accounting of the so very recent discoveries and experiments which have given us the mechanics of Quantum Physics. While not completely ignoring the more "New Agey" kinds of topics, this book pretty much sticks to just what Physicists allow themselves to question. That turns out to be an increasing interest in the nature of consciousness, and, of course concentrates on the "problem" Einstein found in the first place: The Quantum Enigma! All the major scientists who contributed to these findings are discussed and excellent quotes were used to show their attitudes toward the Enigma. I respect this book and find "just the facts" to be amazing to the point of awe-inspiring. God is not ignored or eliminated, but becomes the sustainer of this ever expanding Universe.

An excellent exposition of the true weirdness of quantum physics. No one disagrees on the predictions made by quantum mechanics, but there is much disagreement on what it means about the nature of reality.

A well presented cogent discussion of a difficult and contentious area of science. I appreciate that it addresses the mystical applications of quantum theory respectfully but still keeps its feet in the science. I finally read an explanation of Bells theorem that I understand.

I did quite a bit of research on this subject before reading this book. In fact, I ordered and read it because it was so highly recommended from a variety of sources in the other literature I read. It is rare for anyone with a profound knowledge and expertise in a complex subject matter to be able to communicate that effectively to lay people, but Drs. Rosenblum and Kattner have written a masterpiece of mass communication. True genius lies in the ability to make the complex simple and the esoteric relevant. These two highly-regarded Physics professors have demonstrated true genius as communicators of their science. The book is interesting, challenging at times, and actually entertaining (if you are inclined to read "sciency" stuff). The redundancy sometimes bothered me, personally, but I think it is not over-done for general consumption. Some of the concepts are so

counter-intuitive that the redundancy is likely therapeutic for most readers. "Repetition is the mother of learning." A few of the chapters are probably quite good as stand-alone essays on their specific topics. The chapter on real-world applications of quantum technology is an excellent example, as are the theoretical critiques of various cosmologies arising from quantum mechanics.

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