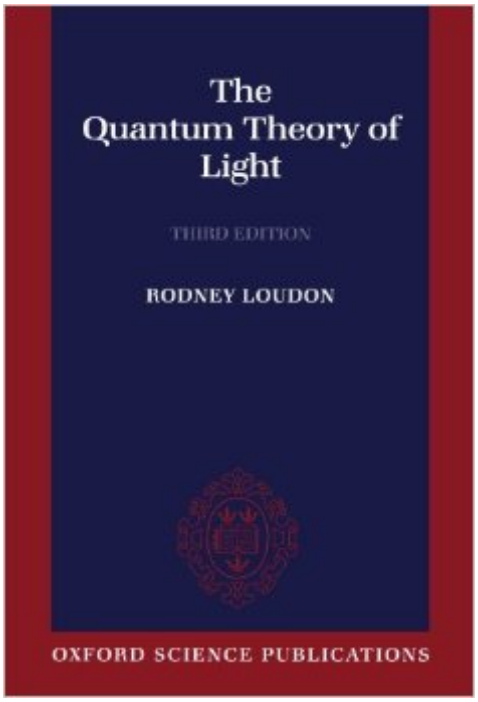
The Quantum Theory Of Light (Oxford Science Publications)



Synopsis

This Third Edition, like its two predecessors, provides a detailed account of the basic theory needed to understand the properties of light and its interactions with atoms, in particular the many nonclassical effects that have now been observed in quantum-optical experiments. The earlier chapters describe the quantum mechanics of various optical processes, leading from the classical representation of the electromagnetic field to the quantum theory of light. The later chapters develop the theoretical descriptions of some of the key experiments in quantum optics. Over half of the material in this Third Edition is new. It includes topics that have come into prominence over the last two decades, such as the beamsplitter theory, squeezed light, two-photon interference, balanced homodyne detection, travelling-wave attenuation and amplification, quantum jumps, and the ranges of nonlinear optical processes important in the generation of nonclassical light. The book is written as a textbook, with the treatment as a whole appropriate for graduate or postgraduate students, while earlier chapters are also suitable for final-year undergraduates. Over 100 problems help to intensify the understanding of the material presented.To request a copy of the Solutions Manual, visit: http://global.oup.com/uk/academic/physics/admin/solutions

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Customer Reviews

This is a decent book. I'd agree that it can be dry and focused on equations more than physics at times, but it offers a very balanced selection of topics, and clearer explanations than many physics books.I particularly like the progression from old quantum theory to semiclassical theory to the fully

quantized theory. It emphasizes the useful aspects of each theory, in particular the usefulness of the old theory in terms of simplicity and accuracy in many situations. History may not always be the best approach to science, but it works if you emphasize the usefulness of simple models and how they follow from more sophisticated models.

For an introduction to quantum optics, the author is to be highly commended for keeping the mathematics and derivations straightforward and easily followed by a senior or 1st year graduate student in experimental physics. Unfortunately, he does not go beyond the math to discuss the physics which the mathematics describe. The problems he includes for students to work out are all derivation of formula with absolutely no application of formula. By the time I got through the book, I realized that I still had no real intuition of how a laser worked, or any understanding of how to apply the quantized radiation field to any real-world problems.So if you’re looking for a handbook to give you a simple tour of the mathematics in the quantum theory of light, this is the book for you. If you’re looking for a more comprehensive treatment, look elsewhere. The selection of topics is very limited: too little math for a theorist, and too little physics for the experimentalist.

Simply an excellent book, both for teaching - and for reference.The clarity of the explanations - and the math - has kept editions of this book beside me for decades.

A must have for anyone into quantum optics. It’s comprehensive, and covers a wide range of topics in the discipline. We used this in a quantum optics course to great effect.

The book is really nice, I highly recommend if you are in looking for fun and training for Olympiads and physics contest

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