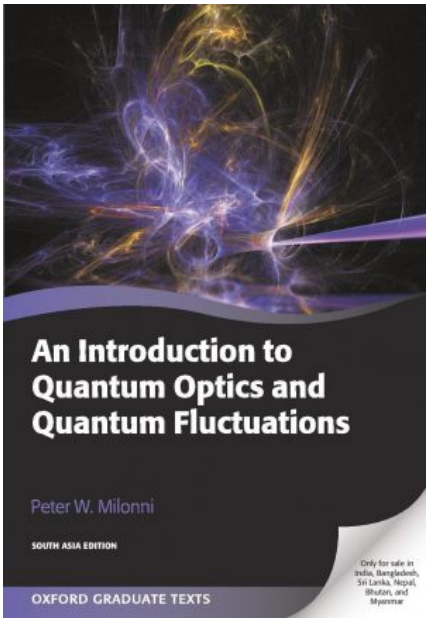
Dev Publishers & Distributors

An Introduction to Quantum Optics and Quantum Fluctuations



Author: Peter W. Milonni

Publisher: Oxford University Press (Distributed exclusively by Dev Publishers & Distributors)

Edition: First

Year: 2020

Dimension: 17 x 24.5 cm

No. of Pages: 544

Weight: 710 gm

ISBN: 9780198860822

Binding: Softcover

Territory: South Asia

Price: Rs 2345

About the Book

This is an introduction to the quantum theory of light and its broad implications and applications. A significant part of the book covers material with direct relevance to current basic and applied research, such as quantum fluctuations and their role in laser physics and the theory of forces between macroscopic bodies (Casimir effects). The book includes numerous historical sidelights throughout, and approximately seventy exercises.

The book provides detailed expositions of the theory with emphasis on general physical principles. Foundational topics in classical and quantum electrodynamics are addressed in the first half of the book, including the semiclassical theory of atom-field interactions, the quantization of the electromagnetic field in dispersive and dissipative media, uncertainty relations, and spontaneous emission. The second half begins with a chapter on the Jaynes-Cummings model, dressed states, and some distinctly quantum-mechanical features of atom-field interactions, and includes discussion of entanglement, the no-cloning theorem, von Neumann's proof concerning hidden variable theories, Bell's theorem, and tests of Bell inequalities. The last two chapters focus on quantum fluctuations and fluctuation-dissipation relations, beginning with Brownian motion, the Fokker-Planck equation, and classical and quantum Langevin equations. Detailed calculations are presented for the laser linewidth, spontaneous emission noise, photon statistics of linear amplifiers and attenuators, and other phenomena. Van der Waals interactions, Casimir forces, the Lifshitz theory of molecular forces between macroscopic media, and the many-body theory of such forces based on dyadic Green functions are analyzed from the perspective of Langevin noise, vacuum field fluctuations, and zero-point energy.

About the Author

Peter W. Milonni is a Laboratory Fellow of the Los Alamos National Laboratory and a Research Professor of Physics at the University of Rochester. He has served on various advisory and editorial boards and as a consultant for several corporations, and received the Optical Society of America's 2008 Max Born Award "for exceptional contributions to the fields of theoretical optics, laser physics and quantum mechanics, and for dissemination of scientific knowledge through authorship of a series of outstanding books."

Review

"For the student who requires a broader understanding of quantum optics beyond a first course, this book is a treasure trove that will reward many hours of independent study beyond the introductory course." — Jonathan Blakely, , Contemporary Physics

"Peter Milonniâs text is a masterpiece of scholarship and clarity.Â The wide range of topics covered and the lucidity of the presentation will delight students and experts alike." — Stephen M. Barnett, School of Physics and Astronomy, University of Glasgow

Dev Publishers & Distributors

STAY CONNECTED
Second Floor, Prakashdeep 22, Delhi Medical Association Road, Darya Ganj, New Delhi – 110 002
Phone No : +91-11-4357-2647
Email ID : info@devbooks.co.in
Website : devbooks.co.in