Introduction To Quantum Optics From The Semi Class

Starting from basic electrodynamics, this volume provides a solid, yet concise introduction to theoretical optics, containing topics such as nonlinear optics, light-matter interaction, and modern topics in quantum optics, including entanglement, cryptography, and quantum computation. The author, with many years of experience in teaching and research, goes way beyond the scope of traditional lectures, enabling readers to keep up with the current state of knowledge. Both content and presentation make it essential reading for graduate and phD students as well as a valuable reference for researchers.

This book on quantum optics is from the point of view of an experimentalist. It approaches the theory of quantum optics with the language of optical modes of classical wave theory, with which experimentalists are most familiar. This approach makes the transition easy from classical optics to quantum optics. The emphasis on the multimode description of an optical system is more realistic than in most quantum optics textbooks. After the theoretical part, the book goes directly to the two most basic experimental techniques in quantum optics and establishes the connection between the experiments and the theory. The applications include some key quantum optics experiments, and a few more current interests that deal with quantum correlation and entanglement, quantum noise in phase measurement and amplification, and quantum state measurement. Request Inspection Copy Contents: Theoretical Foundations of Quantum Optics:Historical Development of Quantum Optics and A Brief IntroductionMode Theory of Optical Fields and Their QuantizationQuantum States of Single-Mode FieldsQuantum States of Multi-Mode FieldsTheory of Photo-detection and Quantum Theory of CoherenceGeneration and Transformation of Quantum StatesExperimental Techniques in Quantum Optics and Their Applications:Experimental Techniques of Quantum Optics I: Photon Counting TechniqueApplications of Photon Counting Techniques: Multi-Photon Interference and EntanglementExperimental Techniques of Quantum Optics II: Detection of Continuous Photo-CurrentsApplications of Homodyne Detection Technique: Quantum Measurement of Continuous VariablesQuantum Noise in Phase MeasurementAppendices:Derivation of an Explicit Expression for Û of a Lossless Beam SplitterEvaluation of the Two Sums in Eq. (8.100) Readership: Advanced undergraduates, graduate students and researchers in quantum optics.

Covering some of the most exciting trends in quantum optics - quantum entanglement, teleportation, and levitation - this textbook is ideal for advanced undergraduate and graduate students. The book journeys through the vast field of quantum optics following a single theme: light in media. A wide range of subjects are covered, from the force of the quantum vacuum to astrophysics, from quantum measurements to black holes. Ideas are explained in detail and formulated so that students with little prior knowledge of the subject can follow them. Each chapter ends with several short questions followed by a more detailed homework problem, designed to test the reader and show how the ideas discussed can be applied. Solutions to homework problems are available at www.cambridge.org/9780521869782.

Covering a number of important subjects in quantum optics, this textbook is an excellent introduction for advanced undergraduate and beginning graduate students, familiarizing readers with the basic concepts and formalism as well as the most recent advances. The first part of the textbook covers the semi-classical approach where matter is quantized, but light is not. It describes significant phenomena in quantum optics, including the principles of lasers. The second part is devoted to the full quantum description of light and its interaction with matter, covering topics such as spontaneous emission, and classical and non-classical states of light. An overview of photon

entanglement and applications to quantum information is also given. In the third part, non-linear optics and laser cooling of atoms are presented, where using both approaches allows for a comprehensive description. Each chapter describes basic concepts in detail, and more specific concepts and phenomena are presented in 'complements'.

An Introduction to Quantum Optics

Principles of Laser Spectroscopy and Quantum Optics

Taming the Quantum

From the Semi-classical Approach to Quantized Light

This graduate-level text surveys the fundamentals of quantum optics, including the quantum theory of partial coherence and the nature of the relations between classical and quantum theories of coherence.1968 edition.

Authored by a highly regarded international researcher and pioneer in the field, An Introduction to Quantum Optics: Photon and Biphoton Physics is a straightforward overview of basic principles and experimental evidence for the quantum theory of light. This book introduces and analyzes some of the most exciting experimental research to date in the field of quantum optics and quantum information, helping readers understand the revolutionary changes occurring in optical science. Paints a picture of light in terms of general quantum interference, to reflect the physical truth behind all optical observations Unlike most traditional books on the subject, this one introduces fundamental classical and quantum concepts and measurement techniques naturally and gradually as it explores the process of analyzing typical experimental observations. Separating itself from other books with this uncommon focus on the experimental part of analysis, this volume: Provides a general overview of the optical coherence of light without quantization Introduces concepts and tools of field quantization and quantum optics based on the principles and rules of quantum mechanics Analyzes similarities and differences between classical and quantum coherence Concentrates on key research topics in quantum optics Explains photon and biphoton physics by examining the devices and experimental procedures used to test theories This book is basic enough for students, but it also covers a broad range of higher-level concepts that will benefit scientists and other professionals seeking to enhance their understanding of practical and theoretical aspects and new experimental methods of measurement. This material summarizes exciting

developments and observations and then helps readers of all levels apply presented concepts and tools to summarize, analyze, and resolve quantum optical problems in their own work. It is a great aid to improve methods of discovering new physics and better understand and apply nontraditional concepts and interpretations in both new and historical experimental discoveries.

Advanced text in quantum optics.

This is the first of a two-volume presentation on current research problems in quantum optics, and will serve as a standard reference in the field for many years to come. The book provides an introduction to the methods of quantum statistical mechanics used in quantum optics and their application to the quantum theories of the single-mode laser and optical bistability. The generalized representations of Drummond and Gardiner are discussed together with the more standard methods for deriving Fokker-Planck equations.

Introduction to Optics and Lasers in Engineering

Theoretical Optics

Introductory Quantum Optics

An Introduction

In a very short time, lasers advanced from research interest to increasingly useful, commercially available tools for material processing, precision measurements, surgery, communication, and even entertainment. This 1996 book provides the background in theoretical physics necessary to understand engineering applications. It summarises relevant theories of geometrical optics, physical optics, quantum optics, and laser physics and ties them to applications in such areas as fluid mechanics, combustion, surface analysis, material processing and laser machining. Advanced topics such as laser Doppler velocimetry, laser-induced fluorescence, and holography are clearly and thoroughly explained. The book includes numerous examples and homework problems. A unique feature is the advanced research problems in each chapter that simulate real-world research and encourage independent reading and analysis.

This book is an introduction to the two closely related subjects of quantum optics and quantum information. The book gives a simple, self-contained introduction to both subjects, while illustrating the physical principles of quantum information processing using quantum optical systems. To make the book accessible to those with backgrounds other than physics, the authors also include a brief review of quantum mechanics. Furthermore, some

aspects of quantum information, for example those pertaining to recent experiments on cavity QED and quantum dots, are described here for the first time in book form.

This textbook, based on the authors' class-tested material, is accessible to students at the advanced undergraduate and graduate level in physics and engineering. While its primary function is didactic, this book's comprehensive choice of topics and its clear and authoritative synthesis of ideas make it a useful reference for researchers, device engineers, and course instructors who wish to consolidate their knowledge of this field. The book takes the semi-classical approach where light is treated as a wave in accordance with the classical Maxwell equations, while matter is governed by quantum theory. It begins by introducing the postulates and mathematical framework of quantum theory, followed by the formalism of the density matrix which allows the transition from microscopic (quantum) quantities to macroscopic (classical) ones. Consequently, the equations describing the reaction of matter to the electromagnetic field in the form of polarization, magnetization, and current are derived. These equations (together with the Maxwell equations) form the complete system of equations sufficient to model a wide class of problems surrounding linear and nonlinear interactions of electromagnetic fields with matter. The nonlinear character of the governing equations determines parameters of the steady-state mode of the quantum generator and is also demonstrated in harmonic generation via propagation of laser radiation in various media. The touchstone description of magnetic phenomena will be of interest to scientists who deal with applications of magneto-resonance phenomena in biology and medicine. Other advanced topics covered include electric dipole transitions, magnetic dipole transitions, plasma transitions, and the devices that can be based on these and other electro-optical and nonlinear-optical systems. This textbook features numerous exercises, some of which are investigatory and some of which require computational solutions.

Quantum Optics gives a comprehensive coverage of developments in quantum optics over the past twenty years. In the early chapters the formalism of quantum optics is elucidated and the main techniques are introduced. These are applied in the later chapters to problems such as squeezed states of light, resonance fluorescence, laser theory, quantum theory of four-wave mixing, quantum non-demolition measurements, Bell's inequalities, and atom optics. Experimental results are used to illustrate the theory throughout. This yields the most comprehensive and up-to-date coverage of experiment and theory in quantum optics in any textbook.

Quantum Optics with Semiconductor Nanostructures

Quantum Optics in Phase Space

Optical Coherence and Quantum Optics

Statistical Methods in Quantum Optics 1

Provides fully updated coverage of new experiments in quantum optics This fully revised and expanded edition of a well-established textbook on experiments on quantum optics covers new concepts, results, procedures, and developments in state-of-the-art experiments. It starts with the basic building blocks and ideas of quantum optics, then moves on to detailed procedures and new techniques for each experiment. Focusing on metrology, communications, and quantum logic, this new edition also places more emphasis on single photon technology and hybrid detection. In addition, it offers end-of-chapter summaries and full problem sets throughout. Beginning with an introduction to the subject, A Guide to Experiments in Quantum Optics, 3rd Edition presents readers with chapters on classical models of light, photons, quantum models of light, as well as basic optical components. It goes on to give readers full coverage of lasers and amplifiers, and examines numerous photodetection techniques being used today. Other chapters examine quantum noise, squeezing experiments, the application of squeezed light, and fundamental tests of quantum mechanics. The book finishes with a section on quantum information before summarizing of the contents and offering an outlook on the future of the field. -Provides all new updates to the field of quantum optics, covering the building blocks, models and concepts, latest results, detailed procedures, and modern experiments -Places emphasis on three major goals: metrology, communications, and quantum logic -Presents fundamental tests of quantum mechanics (Schrodinger Kitten, multimode entanglement, photon systems as quantum emulators), and introduces the density function -Includes new trends and technologies in quantum optics and photodetection, new results in sensing and metrology, and more coverage of quantum gates and logic, cluster states, waveguides for multimodes, discord and other quantum measures, and quantum control -Offers end of chapter summaries and problem sets as new features A Guide to Experiments in Quantum Optics, 3rd Edition is an ideal book for professionals, and graduate and upper level students in physics and engineering science.

This book presents a systematic account of optical coherence theory within the framework of classical optics, as applied to such topics as radiation from sources of different states of coherence, foundations of radiometry, effects of source coherence on the spectra of radiated fields, coherence theory of laser modes, and scattering of partially coherent light by random media.

This book is a thoroughly modern and highly pedagogical graduate-level introduction to quantum optics, a subject which has witnessed stunning developments in recent years and has come to occupy a central role in the 'second quantum revolution'. The reader is invited to explore the fundamental role that quantum optics plays in the control and manipulation of quantum systems, leading to ultracold atoms, circuit QED, quantum information science, quantum optomechanics, and quantum metrology. The building blocks of the subject are presented in a sequential fashion, starting from the simplest physical situations before moving to increasingly complicated ones. This pedagogically appealing approach leads to quantum entanglement and measurement theory being introduced early on and before more specialized topics such as cavity QED or laser cooling. The final chapter illustrates the power of scientific cross-

fertilization by surveying cutting-edge applications of quantum optics and optomechanics in gravitational wave detection, tests of fundamental physics, searches for dark matter, geophysical monitoring, and ultraprecise clocks. Complete with worked examples and exercises, this book provides the reader with enough background knowledge and understanding to follow the current journal literature and begin producing their own original research.

This book offers a complete revision for its introduction to the quantum theory of light, including notable developments as well as improvements in presentation of basic theory and concepts, with continued emphasis on experimental aspects. The author provides a thorough overview on basic methods of classical and quantum mechanical measurements in quantum optics, enabling readers to analyze, summarize, and resolve quantum optical problems. The broad coverage of concepts and tools and its practical, experimental emphasis set it apart from other available resources. New discussions of timely topics such as the concept of the photon and distinguishability bring the entire contents up to date. Key Features: Provides a complete update of a classic textbook for the field. Features many new topics, including optical coherence, coherent and incoherent imaging, turbulence-free interferometry. Includes new chapters for intensity fluctuation correlation and thermal light ghost imaging, and biphoton imaging. Offers a complete overhaul of the introductory theory to give a more coherent and thorough treatment. Expands on discussions of optical tests of quantum theory, Popper's experiment, Einstein's locality questions, and the delayed choice quantum eraser.

Introduction to Quantum Electronics and Nonlinear Optics

Fundamentals of Quantum Optics

The Quantum Theory of Nonlinear Optics

Photon and Biphoton Physics

An understanding of the interaction between light and matter on a quantum level is of fundamental interest and has many applications in optical technologies. The quantum nature of the interaction has recently attracted great attention for applications of semiconductor nanostructures in quantum information processing. Quantum optics with semiconductor nanostructures is a key guide to the theory, experimental realisation, and future potential of semiconductor nanostructures in the exploration of quantum optics. Part one provides a comprehensive overview of single quantum dot systems, beginning with a look at resonance fluorescence emission. Quantum optics with single quantum dots in photonic crystal and micro cavities are explored in detail, before part two goes on to review nanolasers with quantum dot emitters. Light-matter interaction in semiconductor nanostructures, including photon statistics and photoluminescence, is the focus of part three, whilst part four explores all-solid-state quantum optics, crystal nanobeam cavities and quantum-dot microcavity systems. Finally, part five investigates ultrafast phenomena, including femtosecond quantum optics and coherent optoelectronics with quantum dots. With its distinguished editor and international team of expert contributors, Quantum optics with semiconductor nanostructures is an essential guide for all those

involved with the research, development, manufacture and use of semiconductors nanodevices, lasers and optical components, as well as scientists, researchers and students. A key guide to the theory, experimental realisation, and future potential of semiconductor nanostructures in the exploration of quantum optics Chapters provide a comprehensive overview of single quantum dot systems, nanolasers with quantum dot emitters, and light-matter interaction in semiconductor nanostructures Explores all-solid-state quantum optics, crystal nanobeam cavities and quantum-dot microcavity systems, and investigates ultrafast phenomena

This thorough and self-contained introduction to modern optics covers, in full, the three components: ray optics, wave optics and quantum optics. Examples of modern applications in the current century are used extensively.

Quantum Optics in Phase Space provides a concise introduction to the rapidly moving field of quantum optics from the point of view of phase space. Modern in style and didactically skillful, Quantum Optics in Phase Space prepares students for their own research by presenting detailed derivations, many illustrations and a large set of workable problems at the end of each chapter. Often, the theoretical treatments are accompanied by the corresponding experiments. An exhaustive list of references provides a guide to the literature. Quantum Optics in Phase Space also serves advanced researchers as a comprehensive reference book. Starting with an extensive review of the experiments that define quantum optics and a brief summary of the foundations of quantum mechanics the author Wolfgang P. Schleich illustrates the properties of quantum states with the help of the Wigner phase space distribution function. His description of waves ala WKB connects semi-classical phase space with the Berry phase. These semi-classical techniques provide deeper insight into the timely topics of wave packet dynamics, fractional revivals and the Talbot effect. Whereas the first half of the book deals with mechanical oscillators such as ions in a trap or atoms in a standing wave the second half addresses problems where the quantization of the radiation field is of importance. Such topics extensively discussed include optical interferometry, the atom-field interaction, quantum state preparation and measurement, entanglement, decoherence, the one-atom maser and atom optics in quantized light fields. Quantum Optics in Phase Space presents the subject of quantum optics as transparently as possible. Giving wide-ranging references, it enables students to study and solve problems with modern scientific literature. The result is a remarkably concise yet comprehensive and accessible text- and reference book - an inspiring source of information and insight for students, teachers and researchers alike.

An in-depth and wide-ranging introduction to the field of quantum optics.
An Introduction to Basic Principles and Theory
From Quantum Measurements to Black Holes
Introduction to Quantum Optics
Mathematical Methods of Quantum Optics

Starting from first principles, this reference treats the theoretical aspects of quantum optics. It develops a unified approach for determining the dynamics of a two-level and three-level atom in combinations of quantized field under certain conditions.

From the reviews: "This is a book that should be found in any physics library. It is extremely useful for all graduate students, Ph.D. students and researchers interested in the quantum physics of light." Optics & Photonics News

This book discusses quantum optics and investigates the quantum properties of interactions between atoms and laser fields. It is divided into three parts. Part I introduces the elementary theory of the interaction between atoms and light. Part II provides a concentrated discussion on the quantum properties of light fields. Part III deals with the quantum dynamic properties of the atoms interacting with laser fields. This book can be used as a text for both graduate and undergraduate students; it will also benefit scientists who are interested in quantum optics and theoretical physics.

Ideal for graduate courses on quantum optics, this textbook provides an up-to-date account of the basic principles and applications. It features end-of-chapter exercises with solutions available for instructors at www.cambridge.org/9781107006409. It is invaluable to both graduate students and researchers in physics and photonics, quantum information science and quantum communications.

Fundamentals of Quantum Optics and Quantum Information

Quantum Optics for Experimentalists

A Modern Introduction to Classical and Quantum Optics

Quantum Optics

This is the third, revised and extended edition of the acknowledged "Lectures on Quantum Optics" by W. Vogel and D.-G. Welsch. It offers theoretical concepts of quantum optics, with special emphasis on current research trends. A unified concept of measurement-based nonclassicality and entanglement criteria and a unified approach to medium-assisted electromagnetic vacuum effects including Van der Waals and Casimir Forces are the main new topics that are included in the revised edition. The rigorous development of quantum optics in the context of quantum field theory and the attention to details makes the book valuable to graduate students as well as to researchers. Voices to the new edition: "There are many good books in this area, but this one really excels in terms of broad coverage, choice of topics, and precision. It is very useful as a textbook for a quantum optics course, and also as a general reference for researchers in quantum optics. ... Also, the new edition includes some subtle and fundamental material about non-classicality, medium-assisted

electromagnetic vacuum effects, and leaky cavities, based on research developed by the authors." Prof. Luiz Davidovich, Rio de Janeiro

Publisher Description

Quantum Optics and Nanophotonics consists of the lecture notes of the Les Houches Summer School 101 held in August 2013. Some of the most eminent experts in this flourishing area of research have contributed chapters lying at the intersection of basic quantum science and advanced nanotechnology. The book is part of the renowned series of tutorial books that contain the lecture notes of all the Les Houches Summer Schools since the 1950's and cover the lates developments in physics and related fields.

Written primarily for advanced undergraduate and masters level students in physics, this text includes a broad range of topics in applied quantum optics such as laser cooling, Bose-Einstein condensation and quantum information processing.

A Guide to Experiments in Quantum Optics

Essential Quantum Optics

Elements of Quantum Optics

An Introduction to Quantum Optics and Quantum Fluctuations

Principles of Laser Spectroscopy and Quantum Optics is an essential textbook for graduate students studying the interaction of optical fields with atoms. It also serves as an ideal reference text for researchers working in the fields of laser spectroscopy and quantum optics. The book provides a rigorous introduction to the prototypical problems of radiation fields interacting with two- and three-level atomic systems. It examines the interaction of radiation with both atomic vapors and condensed matter systems, the density matrix and the Bloch vector, and applications involving linear absorption and saturation spectroscopy. Other topics include hole burning, dark states, slow light, and coherent transient spectroscopy, as well as atom optics and atom interferometry. In the second half of the text, the authors consider applications in which the radiation field is quantized. Topics include spontaneous decay, optical pumping, sub-Doppler laser cooling, the Heisenberg equations of motion for atomic and field operators, and light scattering by atoms in both weak and strong external fields. The concluding chapter offers methods for creating entangled and spin-squeezed states of matter. Instructors can create a one-semester course based on this book by combining the introductory chapters with a selection of the more advanced material. A solutions manual is available to teachers. Rigorous introduction to the interaction of optical fields with atoms Applications include linear and nonlinear spectroscopy, dark states, and slow light Extensive chapter on atom optics and atom interferometry Conclusion explores entangled and spin-squeezed states of matter Solutions manual (available only to teachers)

This new, updated and enlarged edition of the successful and exceptionally well-structured textbook features new chapters on such hot topics as optical angular momentum, microscopy beyond the resolution limit, metamaterials,

femtocombs, and quantum cascade lasers. It provides comprehensive and coherent coverage of fundamental optics, laser physics, and important modern applications, while equally including some traditional aspects for the first time, such as the Collins integral or solid immersion lenses. Written for newcomers to the topic who will benefit from the author's ability to explain difficult theories and effects in a straightforward and readily comprehensible way.

This classroom-tested textbook is a modern primer on the rapidly developing field of quantum nano optics which investigates the optical properties of nanosized materials. The essentials of both classical and quantum optics are presented before embarking through a stimulating selection of further topics, such as various plasmonic phenomena, thermal effects, open quantum systems, and photon noise. Didactic and thorough in style, and requiring only basic knowledge of classical electrodynamics, the text provides all further physics background and additional mathematical and computational tools in a self-contained way. Numerous end-of-chapter exercises allow students to apply and test their understanding of the chapter topics and to refine their problem-solving techniques.

Quantum Optics for Engineers provides a transparent and methodical introduction to quantum optics via the Dirac's bra–ket notation with an emphasis on practical applications and basic aspects of quantum mechanics such as Heisenberg's uncertainty principle and Schrodinger's equation. Self-contained and using mainly first-year calculus and algebra tools, the book: Illustrates the interferometric quantum origin of fundamental optical principles such as diffraction, refraction, and reflection Provides a transparent introduction, via Dirac's notation, to the probability amplitude of quantum entanglement Explains applications of the probability amplitude of quantum entanglement to optical communications, quantum cryptography, quantum teleportation, and quantum computing. Quantum Optics for Engineers is succinct, transparent, and practical, revealing the intriguing world of quantum entanglement via many practical examples. Ample illustrations are used throughout its presentation and the theory is presented in a methodical, detailed approach.

Master Equations and Fokker-Planck Equations

The Light Fantastic

Quantum Optics for Engineers

Introduction to Modern Quantum Optics

This book introduces the quantum statistical methods used in quantum physics and is an essential guide for any student beginning their studies in quantum physics.

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.
In this revised and supplemented edition of "Lectures on Quantum Optics" by W. Vogel and D.-G. Welsch the authors provide a profound discussion of the theoretical foundations of quantum optics, with special emphasis on important research trends. The rigorous development of quantum optics in the context of quantum field theory and the attention spent to details make the book valuable to graduate students as well as to researchers in related areas.Retendo! demonstrates and explains precision playpaddling, unlocking the secrets to cartwheels, squirt turns, and an array of exciting moves in a hole or off a pourover. You'll learn all the new moves like whippets, mctwists, splitwheels, and screwups.
This self-contained treatment of field quantization requires no prior knowledge of nonlinear optics. Supplemented by end-of-chapter exercises and detailed examples of calculation techniques in different systems, it is a valuable resource for graduate students and researchers in nonlinear optics, condensed matter physics, quantum information and atomic physics.
Optics, Light and Lasers
Quantum Optics for Beginners
From Light Quanta to Quantum Teleportation
Nano and Quantum Optics
Atomic correlations have been studied in physics for over 50 years and known as collective effects until recently when they came to be recognized as a source of

entanglement. This is the first book that contains detailed and comprehensive analysis of two currently extensively studied subjects of atomic and quantum physics—atomic correlations and their relations to entanglement between atoms or atomic systems—along with the newest developments in these fields. This book assembles accounts of many phenomena related to or resulting from atomic correlations. The essential language of the book is in terms of density matrices and master equations that provide detailed theoretical treatments and experimental analysis of phenomena such as entanglement between atoms, spontaneously or externally induced atomic coherence, engineering of atomic correlations, storage and controlled transfer of correlations, and dynamics of correlated systems.
The Practical Approach to Modern Aspects of Photonics and Laser Physics
Quantum Optics and Nanophotonics