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Introduction to Modern Optics Information Gatekeepers Inc
Since the early days of nonlinear optics in the 1960s, the field has expanded dramatically, and is now a vast and vibrant field with countless technological applications. Providing a gentle introduction to the principles of the subject, this textbook is ideal for graduate students starting their research in this exciting area. After basic ideas have been outlined, the book offers a thorough analysis of second harmonic generation and related second-order processes, before moving on to third-order effects, the nonlinear optics of short optical pulses and coherent effects such as electromagnetically-induced transparency. A simplified treatment of high harmonic generation is presented at the end. More advanced topics, such as the linear and nonlinear optics of crystals, the tensor nature of the nonlinear coefficients and their quantum mechanical representation, are confined to specialist chapters so that readers can focus on basic principles before tackling these more difficult aspects of the subject.
International Conference on Education in Optics Light and Matter
An intuitive and accessible approach to the fundamentals of physical optics In the newly revised Second Edition of Principles of Physical Optics, eminent researcher Dr. Charles A. Bennet delivers an intuitive and practical text designed for a one-semester, introductory course in optics. The book helps readers build a firm foundation in physical optics and gain valuable, practical experience with a range of mathematical applications, including matrix methods, Fourier analysis, and complex algebra. This latest edition is thoroughly updated and offers 20% more worked examples and 50% more homework problems than the First Edition. Only knowledge of standard introductory sequences in calculus and calculus-based physics is assumed, with the included mathematics limited to what is necessary to adequately address the subject matter. The book provides additional materials on optical imaging and nonlinear optics and dispersion for use in an accelerated course. It also offers: A thorough introduction to the physics of waves, including the one-dimensional wave equation and transverse traveling waves on a string Comprehensive explorations of electromagnetic waves and photons, including introductory material on electromagnetism and electromagnetic wave equations Practical discussions of reflection and refraction, including Maxwell's equations at an interface and the Fresnel equations In-depth examinations of geometric optics, as well as superposition, interference, and diffraction Perfect for advanced undergraduate students of physics, chemistry, and materials science, Principles of Physical Optics also belongs on the bookshelves of engineering students seeking a one-stop introduction to physical optics.
Introduction to Lens Design Springer Science & Business Media
Praise for the 1st Edition: "well written and up to date.... The problem sets at the end of each chapter reinforce and enhance the material presented, and may give students confidence in handling real-world problems." Optics & Photonics News "rigorous but simple description of a difficult field keeps the reader's attention throughout.... serves perfectly for an introductory-level course." Physics Today This fully revised introduction enables the reader to understand and use the basic principles related to many phenomena in nonlinear optics and provides the mathematical tools necessary to solve application-relevant problems. The book is a pedagogical guide aimed at a diverse audience including engineers, physicists, and chemists who want a tiered approach to understanding nonlinear optics. The material is augmented by numerous problems, with many requiring the reader to perform real-world calculations for a range of fields, from optical communications to remote sensing and quantum information. Analytical solutions of equations are covered in detail and numerical approaches to solving problems are explained and demonstrated. The second edition expands the earlier treatment and includes: A new chapter on quantum nonlinear optics. Thorough treatment of parametric optical processes covering birefringence, tolerances and beam optimization to design and build high conversion efficiency devices. Treatment of numerical methods to solving sets of complex nonlinear equations. Many problems in each chapter to challenge reader comprehension. Extended treatment of four-wave mixing and solitons. Coverage of ultrafast pulse propagation including walk-off effects.
Modern Optical Engineering Cambridge University Press
Ideal as a classroom text or for individual study, this unique one-volume overview of classical wave theory covers wave phenomena of acoustics, optics, electromagnetic radiations, and more.
Introduction to Optics Elsevier Health Sciences
A complete basic undergraduate course in modern optics for students in physics, technology, and engineering. The first half deals with classical physical optics; the second, quantum nature

of light. Solutions.

Introduction to Optics Cambridge University Press
This book introduces senior-level and postgraduate students to the principles and applications of biophotonics. It also serves as a valuable reference resource or as a short-course textbook for practicing physicians, clinicians, biomedical researchers, healthcare professionals, and biomedical engineers and technicians dealing with the design, development, and application of photonics components and instrumentation to biophotonics issues. The topics include the fundamentals of optics and photonics, the optical properties of biological tissues, light-tissue interactions, microscopy for visualizing tissue components, spectroscopy for optically analyzing the properties of tissue, and optical biomedical imaging. It also describes tools and techniques such as laser and LED optical sources, photodetectors, optical fibers, bioluminescent probes for labeling cells, optical-based biosensors, surface plasmon resonance, and lab-on-a-chip technologies. Among the applications are optical coherence tomography (OCT), optical imaging modalities, photodynamic therapy (PDT), photobiostimulation or low-level light therapy (LLLT), diverse microscopic and spectroscopic techniques, tissue characterization, laser tissue ablation, optical trapping, and optogenetics. Worked examples further explain the material and how it can be applied to practical designs, and the homework problems help test readers' understanding of the text.

Statistical Optics Springer Science & Business Media
Homework Helpers: Physics is the latest book in the popular series that has been designed to help students master the material and tackle the tests. It will help any student unravel the formulas that describe the world around him or her. Each lesson is written in clear, easy-to-understand language, and supported with review questions. Answers and detailed explanations are found at the end of each chapter. Homework Helpers: Physics covers all of the topics included in a typical one-year physics curriculum, including: -Straight-line kinematics, free-fall, and projectile motion. -Forces, friction, and motion on an incline. -Electrostatics, electricity, and magnetism. -Waves, light, and optics. -Nuclear reactions. The Homework Helpers Series is an excellent review for any standardized Physics test, and is invaluable in providing support and guidance throughout a year's course of study. This new edition is printed in two colors for easier reference and in a larger trim size.

Physics of Light and Optics (Black & White) Academic Press
Covering some of the most exciting trends in quantum optics, this textbook is ideal for advanced undergraduate and graduate students. Each chapter ends with short questions and a more detailed homework problem to show how the ideas discussed

can be applied. Solutions to homework problems are available at www.cambridge.org/9780521869782.

Optical Metamaterials: Qualitative Models Cambridge University Press
A revised version of a text which was first published in 1966. The book is designed as a general reference book for engineers and assumes a broad knowledge of current optical systems and their design. Additional topics include fibre optics, thin films and CAD systems.

Ultrafast Optics Springer
The most up-to-date treatment available on modern optics. The text gives an overview of the topics and an introduction to design practices for a number of applications. It provides the student with the foundations to enter into advanced courses in nonlinear optics, lens design, laser system design, and optical communications.

Biomedical Optics CRC Press
Accurate, authoritative and comprehensive, "Optics, Fourth Edition" has been revised to provide readers with the most up-to-date coverage of optics. The market leader for over a decade, this book provides a balance of theory and instrumentation, while also including the necessary classical background. The writing style is lively and accessible. For college instructors, students, or anyone interested in optics.

Information Gatekeepers Inc
This introductory text is a reader friendly treatment of geometrical and physical optics emphasizing problems and solved examples with detailed analysis and helpful commentary. The authors are seasoned educators with decades of experience teaching optics. Their approach is to gradually present mathematics explaining the physical concepts. It covers ray tracing to the wave nature of light, and introduces Maxwell's equations in an organic fashion. The text then moves on to explains how to analyze simple optical systems such as spectacles for improving vision, microscopes, and telescopes, while also being exposed to contemporary research topics. Ajawad I. Haija is a professor of physics at Indiana University of Pennsylvania. M. Z. Numan is professor and chair of the department of physics at Indiana University of Pennsylvania. W. Larry Freeman is Emeritus Professor of Physics at Indiana University of Pennsylvania.

Fiber Optics Weekly Update March 19, 2010 IGI Global
Introduction to Optics is now available in a re-issued edition from Cambridge University Press. Designed to offer a comprehensive and engaging introduction to intermediate and upper level undergraduate physics and engineering students, this text also allows instructors to select specialized content to suit individual curricular needs and goals. Specific features of the text, in terms of coverage beyond traditional areas, include extensive use of matrices in dealing with ray tracing,

polarization, and multiple thin-film interference; three chapters devoted to lasers; a separate chapter on the optics of the eye; and individual chapters on holography, coherence, fiber optics, interferometry, Fourier optics, nonlinear optics, and Fresnel equations.

Introduction to Nonlinear Optics Springer
The basic concepts of quantum mechanics are explained in this book in a concise and accessible manner. Illustrating real-world applications in many diverse fields, it is suitable for students in electrical engineering, materials science and applied physics. It contains many homework problems and worked examples, with solutions available to instructors.

Submarine Fiber Optics Communication Systems Monthly Newsletter March 2010 CRC Press
"This book gives a general coverage of learning management systems followed by a comparative analysis of the particular LMS products, review of technologies supporting different aspect of educational process, and, the best practices and methodologies for LMS-supported course delivery"--Provided by publisher.

Essential Quantum Optics Cambridge University Press
Presents readers with the basic science, technology, and applications for every type of adaptive lens An adaptive lens is a lens whose shape has been changed to a different focal length by an external stimulus such as pressure, electric field, magnetic field, or temperature. Introduction to Adaptive Lenses is the first book ever to address all of the fundamental operation principles, device characteristics, and potential applications of various types of adaptive lenses. This comprehensive book covers basic material properties, device structures and performance, image processing and zooming, optical communications, and biomedical imaging. Readers will find homework problems and solutions included at the end of each chapter—and based on the described device structures, they will have the knowledge to fabricate adaptive lenses for practical applications or develop new adaptive devices or concepts for advanced investigation. Introduction to Adaptive Lenses includes chapters on: Optical lenses Elastomeric membrane lenses Electro-wetting lenses Dielectrophoretic lenses Mechanical-wetting lenses Liquid crystal lenses This is an important reference for optical engineers, research scientists, graduate students, and undergraduate seniors.

Vibrations and Waves World Scientific Publishing Company
The material for these volumes has been selected from the past

twenty years' examination questions for graduate students at University of California at Berkeley, Columbia University, the University of Chicago, MIT, State University of New York at Buffalo, Princeton University and University of Wisconsin.

Introductory Quantum Optics John Wiley & Sons

"This book provides a practical description of optics that satisfies the needs often encountered by some engineers in the practice of their profession. Optical components, including optical sources and detectors, have found their way into products that we buy for the house, and into industrial equipment. As a textbook, it provides an efficient tool for the student to gain in-depth knowledge of a subject, with homework problems to test and verify mastery of the subject." —Antonio Sanchez-Rubio, MIT Lincoln Laboratory, Lexington, Massachusetts, USA "This book covers all the experimental tools, described meticulously and with clear illustrations, which students will need to perform their experiments. I wish I had this book when I taught an optics course!" —A.K. Ramdas, Purdue University, West Lafayette, Indiana, USA This book provides readers with a brief introduction to optical components. Materials presented in this book prepare readers to deal with optical components in the areas of optics and optical technology. Introduction to Optical Components features nine chapters with topics ranging from lenses (materials, magnifiers, and cameras); mirrors (spherical, ellipsoidal, and aberrations); diffraction gratings (holographic and multilayer dielectric); polarizers (birefringent, reflective, and Jones matrix algebra); windows (UV and AR coating materials); filters (neutral density and Raman); beamsplitters (plate, cube, and pellicle); sources (light-emitting diodes and lasers); and detectors (thermal, photon, and photodetector noise). This text also features a detailed discussion of non-ideal effects for practical components using minimal amounts of derivations (that do not compromise essential physical, mathematical, or material properties). While there are numerous books that feature "optical" in their title, to date, no textbook on optical components exists. It is for this reason that Introduction to Optical Components is such a vital resource. The technical level of this book is equivalent to an undergraduate course in the optics and optical technology curriculum. Students are required to have little familiarity with optics. Practitioners in optics and optical technology will also find this book useful. Each chapter includes numerous mathematical equations; tables providing useful optical parameters for many optical materials; and end-of-chapter questions and their corresponding solutions.

Concise Optics John Wiley & Sons

Publisher Description

Essential Quantum Optics Information Gatekeepers Inc