
Contemporary Optics

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Contemporary Optics

2021-12-24

MAXIMILLIAN HORTON

17th Slovak-Czech-Polish Optical Conference on Wave and Quantum Aspects of Contemporary Optics CRC Press

This textbook on optics provides an

introduction to key concepts of wave optics and light propagation. It uniquely makes extensive use of Fourier methods and the angular-spectrum approach, especially to provide a unified approach to Fraunhofer and Fresnel diffraction. A recurring theme is

that simple building blocks such as plane and spherical waves can be summed to construct useful solutions. The text pays particular attention to analysing topics in contemporary optics such as propagation, dispersion, laser beams and wave guides, apodisation, tightly-focused vector fields, unconventional polarization states, and light-matter interactions.

Throughout the text, the principles are applied through worked examples, and the book is copiously illustrated with more than 240 figures. The 200 end-of-chapter exercises offer further opportunities for testing the reader's understanding.

Generalized Phase

Contrast: Elsevier

This book presents a collection of memoir papers on the development of modern and contemporary optics and optoelectronics in China from the 18th to 20th centuries. The papers were written by famous scientists in China, including members of the Chinese Academy of Sciences and the Chinese Academy of Engineering, sharing their experience in different fields of optics and optoelectronics development. This is a unique book in understanding the natural science history of optics and optoelectronics. It gives you the general idea about how the western optical science spread to China in the 17th to 18th century;

the cradle of the contemporary optics in China; Birth, development and application of lasers in China; high energy and high power lasers for laser antiballistic missile and laser nuclear fusion; development of Chinese optical communication and optical information storage; laser and infrared optics research for space science; development of Chinese optical instruments, etc.

Contents: West Science vs. East (Gan Fuxi); Optical Science and Technology in China in the First Half of 20th Century (Gan Fuxi); The Cradle of the Contemporary Optics in China (Gan Fuxi); The History of Research and Development of Optical

Glass in China (Gan Fuxi); Birth and Early Development of Lasers in China (Gan Fuxi); Laser ABM OCo One of the Strategic Defense Means in Early Time (Gan Fuxi); Memory of the Early Days OCo Quantum Electronics Research in the Institute of Electronics (Lin Fucheng); Chinese Laser Research Opened to the World (Gan Fuxi); Breakthroughs and Development of Semiconductor Lasers in China (Wang Qiming and Huang Yong-Zhen); Development of the Solid State Laser Materials in China (Gan Fuxi); Development of High Power Lasers in China (Fan Dianyuan); Establishment of the Daheng Company OCo A Pioneering Work of Chinese Scientific and Technological System

Reform (Gan Fuxi); National 863 High Technology Program Promoted the Development of Optoelectronics in China (Gan Fuxi); Open Up the Optical Information Storage Technology in China (Gan Fuxi); Progress of Optical Communications in China OCo Fragments of Personal Reminiscences (Fang Zujie); The Course of Development of Astronomical Optical Instruments (Pan Junhua); Infra Red Optics Research and Application in Satellite Monitoring (Xue Yongqi); High Speed Imaging and Monitoring Research and Development (Hou Xun); Research on Laser Cooling and Time Standard in Optical Wavelength Range

(Wang Yuzhu); Industrial Development of Optical Instruments in China (Zhuang Songlin). Readership: Students and scientists who are interested in the history of optics and optoelectronics in China.

Contemporary Optics Springer

This book provides an up-to-date account of current trends in nonlinear optics. It is intended for researchers already engaged in the field of nonlinear optics. It may also be used by graduate students due to its comprehensive coverage and pedagogical presentation.

Coherent Optics

Discovery Publishing House
 Proceedings of SPIE present the original research papers

presented at SPIE conferences and other high-quality conferences in the broad-ranging fields of optics and photonics. These books provide prompt access to the latest innovations in research and technology in their respective fields. Proceedings of SPIE are among the most cited references in patent literature.

17th Slovak-Czech-Polish Optical Conference on Wave and Quantum Aspects of Contemporary

Optics Prentice Hall
Proceedings of SPIE present the original research papers presented at SPIE conferences and other high-quality conferences in the broad-ranging fields of optics and photonics. These books provide

prompt access to the latest innovations in research and technology in their respective fields. Proceedings of SPIE are among the most cited references in patent literature.

Contemporary Optics for Scientists and Engineers Wiley-

Interscience
With the advent of lasers, numerous applications of it such as optical information processing, holography, and optical communication have evolved. These applications have made the study of optics essential for scientists and engineers. The present volume, intended for senior under graduate and first-year graduate students, introduces basic concepts necessary for an

understanding of many of these applications. The book has grown out of lectures given at the Master's level to students of applied optics at the Indian Institute of Technology, New Delhi. Chapters 1-3 deal with geometrical optics, where we develop the theory behind the tracing of rays and calculation of aberrations. The formulas for aberrations are derived from first principles. We use the method involving Luneburg's treatment starting from Hamilton's equations since we believe that this method is easy to understand. Chapters 4--8 discuss the more important aspects of contemporary physical optics, namely, diffraction, coherence,

Fourier optics, and holography. The basis for discussion is the scalar wave equation. A number of applications of spatial frequency filtering and holography are also discussed. With the availability of high-power laser beams, a large number of nonlinear optical phenomena have been studied. Of the various nonlinear phenomena, the self-focusing (or defocusing) of light beams due to the nonlinear dependence of the dielectric constant on intensity has received considerable attention. In Chapter 9 we discuss in detail the steady-state self-focusing of light beams. *Contemporary Optics*, 1971 Springer Science & Business Media

This book presents emerging contemporary optical techniques of ultrafast science which have opened entirely new vistas for probing biological entities and processes. The spectrum reaches from time-resolved imaging and multiphoton microscopy to cancer therapy and studies of DNA damage. The book displays interdisciplinary research at the interface of physics and biology. Emerging topics on the horizon are also discussed, like the use of squeezed light, frequency combs and terahertz imaging as the possibility of mimicking biological systems. The book is written in a manner to make it readily accessible to researchers,

postgraduate biologists, chemists, engineers, and physicists and students of optics, biomedical optics, photonics and biotechnology.

Physical Optics

Oxford University Press, USA
Generalized Phase Contrast elevates the phase contrast technique not only to improve phase imaging but also to cross over and interface with diverse and seemingly disparate fields of contemporary optics and photonics. This book presents a comprehensive introduction to the Generalized Phase Contrast (GPC) method including an overview of the range of current and potential applications of GPC in wavefront sensing and phase imaging,

structured laser illumination and image projection, optical trapping and manipulation, and optical encryption and decryption. The GPC method goes further than the restrictive assumptions of conventional Zernike phase contrast analysis and achieves an expanded range of validity beyond weak phase perturbations. The generalized analysis yields design criteria for tuning experimental parameters to achieve optimal performance in terms of accuracy, fidelity and light efficiency. Optimization can address practical issues, such as finding an optimal spatial filter for the chosen application, and can even enable a Reverse Phase Contrast mode

where intensity patterns are converted into a phase modulation.

Contemporary Optics

Springer Science & Business Media

This book covers the applications of Fourier methods and linear systems theory to optical diffraction and imaging, and it will be of use to anyone seeking an understanding of Fourier series and Fourier transforms of one-and two-dimensional structures.

**RESONANT
NONLINEAR OPTICS
OF GASEOUS
SYSTEMS - THE
INTER-
INSTITUTIONAL
SEMINAR ON THE
PROBLEMS OF
CONTEMPORARY
OPTICS AND
SPECTROSCOPY - IN
RUSSIAN.** Society of

Photo Optical Wave Optics: Basic Concepts and Contemporary Trends combines classical optics with some of the latest developments in the field to provide readers with an appreciation and understanding of advanced research topics. Requiring only a basic knowledge of electromagnetic theory and mathematics, this book: Covers the fundamentals of wave optics, such as oscillations, scalar and vector waves, reflection and refraction, polarization, interference and diffraction, and rays and beams Focuses on concepts related to advances in negative materials and superresolution, reflectionless potentials, plasmonics,

spin-orbit interaction, optical tweezers, Pendry lensing, and more Includes MATLAB® codes for specific research problems, offering readers a behind-the-scenes look at the computational practices as well as an opportunity to extend the research Drawing parallels with corresponding quantum problems whenever possible to broaden the horizon and outlook, Wave Optics: Basic Concepts and Contemporary Trends gives readers a taste of what is happening in modern optics today and shows why wave optics remains one of the most interesting and challenging areas of physics.

**Contemporary
Optical Instrument**

Design, Fabrication, and Testing

SPIE-International Society for Optical Engineering
 This book complements the more textually-based Bauhaus scholarship with a practice-oriented and creative interpretive method, which makes it possible to consider Bauhaus-related works in an unconventional light. Edit Toth argues that focusing on the functionalist approach of the Bauhaus has hindered scholars from properly understanding its design work. With a global scope and under-studied topics, the book advances current scholarly discussions concerning the relationship between image technologies and the body by calling attention to the

materiality of image production and strategies of re-channeling image culture into material processes and physical body space, the space of dimensionality and everyday activity.

Contemporary Optical Image Processing with MATLAB Routledge

This book serves two purposes: first to introduce readers to the concepts of geometrical optics, physical optics and techniques of optical imaging and image processing, and secondly to provide them with experience in modeling the theory and applications using the commonly used software tool MATLAB®. A comprehensively revised version of the authors' earlier book *Principles of Applied*

Optics, Contemporary Optical Image Processing with MATLAB brings out the systems aspect of optics. This includes ray optics, Fourier Optics, Gaussian beam propagation, the split-step beam propagation method, holography and complex spatial filtering, ray theory of holograms, optical scanning holography, acousto-optic image processing, edge enhancement and correlation using photorefractive materials, holographic phase distortion correction, to name a few. MATLAB examples are given throughout the text. MATLAB is emphasized since it is now a widely accepted software tool very routinely used in signal processing. A sizeable portion of this book is

based on the authors' own in-class presentations, as well as research in the area. Instructive problems and MATLAB assignments are included at the end of each Chapter to enhance even further the value of this book to its readers. MATLAB is a registered trademark of The MathWorks, Inc. Wave Optics World Scientific Contemporary Nonlinear Optics discusses the different activities in the field of nonlinear optics. The book is comprised of 10 chapters. Chapter 1 presents a description of the field of nonlinear guided-wave optics. Chapter 2 surveys a new branch of nonlinear optics under the heading optical solitons. Chapter 3

reviews recent progress in the field of optical phase conjugation. Chapter 4 discusses ultrafast nonlinear optics, a field that is growing rapidly with the ability of generating and controlling femtosecond optical pulses. Chapter 5 examines a branch of nonlinear optics that may be termed nonlinear quantum optics. Chapter 6 reviews the new field of photorefractive adaptive neural networks. Chapter 7 presents a discussion of recent successes in the development of nonlinear optical media based on organic materials. Chapter 8 reviews the field of nonlinear optics in quantum confined structures. Chapter 9 reviews the field of

nonlinear laser spectroscopy, with emphasis on advances made during the 1980s. Finally, Chapter 10 reviews the field of nonlinear optical dynamics by considering nonlinear optical systems that exhibit temporal, spatial, or spatio-temporal instabilities. This book is a valuable source for physicists and other scientists interested in optical systems and neural networks.

15th Czech-Polish-Slovak Conference on Wave and Quantum Aspects of Contemporary Optics

SPIE-International Society for Optical Engineering

With the advent of lasers, numerous applications of it such as optical information processing,

holography, and optical communication have evolved. These applications have made the study of optics essential for scientists and engineers. The present volume, intended for senior undergraduate and first-year graduate students, introduces basic concepts necessary for an understanding of many of these applications. The book has grown out of lectures given at the Master's level to students of applied optics at the Indian Institute of Technology, New Delhi. Chapters 1-3 deal with geometrical optics, where we develop the theory behind the tracing of rays and calculation of aberrations. The formulas for aberrations are derived

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History of Modern

Optics and

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Development in

China Society of Photo

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12th Czech-Slovak-

Polish Optical

Conference on Wave

and Quantum

Aspects of

Contemporary

Optics Academic Press

14th Slovak-Czech-

Polish Optical

Conference on Wave

and Quantum Aspects

of Contemporary

Optics

Florence Meeting on

Problems in

Contemporary Optics

Contemporary

Nonlinear Optics