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Goodman Fourier Optics Solutions

The 60th anniversary edition of this classic and unrivalled optics reference work includes a special foreword by Sir Peter Knight.

This is a graduate textbook on the principles of linear inverse problems, methods of their approximate solution, and practical application in imaging. The level of mathematical treatment is kept as low as possible to make the book suitable for

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a wide range of readers from different backgrounds in science and engineering. Mathematical prerequisites are first courses in analysis, geometry, linear algebra, probability theory, and Fourier analysis. The authors concentrate on presenting easily implementable and fast solution algorithms. With examples and exercises throughout, the book will provide the reader with the appropriate background for a clear understanding of the essence of inverse problems (ill-posedness

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and its cure) and, consequently, for an intelligent assessment of the rapidly growing literature on these problems.

Uniting classical and modern photonics approaches by presenting optical analyses as solutions of Maxwell's equations, this unique book enables students and practising engineers to fully understand the similarities and differences between the different methods. The book begins with a thorough discussion of

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plane wave analysis, which provides a clear understanding of optics without considering boundary condition or device configuration. It then goes on to cover diffraction analysis of many applications, including a rigorous analysis of TEM waves using Maxwell's equations with boundaries. Laser cavity modes and Gaussian beams are presented, modal analysis is covered, and approximation methods are discussed (including the perturbation technique, coupled mode analysis, and

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super mode analysis). With theory linked to practical examples throughout, it provides a clear understanding of the interplay between plane wave, diffraction and modal analysis, and how the different techniques can be applied to various areas including imaging, signal processing, and optoelectronic devices. This book covers both the mathematics of inverse problems and optical systems design, and includes a review of the mathematical methods and Fourier optics. The first

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part of the book deals with the mathematical tools in detail with minimal assumption about prior knowledge on the part of the reader. The second part of the book discusses concepts in optics, particularly propagation of optical waves and coherence properties of optical fields that form the basis of the computational models used for image recovery. The third part provides a discussion of specific imaging systems that illustrate the power of the hybrid

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computational imaging model in enhancing imaging performance. A number of exercises are provided for readers to develop further understanding of computational imaging. While the focus of the book is largely on optical imaging systems, the key concepts are discussed in a fairly general manner so as to provide useful background for understanding the mechanisms of a diverse range of imaging modalities.

With Emphasis on Rotation
and Motion Groups

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Fourier Optics and
Computational Imaging
Computational Fourier
Optics

Introduction to Fourier
Optics

Introduction to Optical
Microscopy

The first edition of the Encyclopedia of Optical and Photonic Engineering provided a valuable reference concerning devices or systems that generate, transmit, measure, or detect light, and to a lesser degree, the basic interaction of light and matter. This Second Edition not only reflects the changes in optical and photonic

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engineering that have occurred since the first edition was published, but also: Boasts a wealth of new material, expanding the encyclopedia ' s length by 25 percent Contains extensive updates, with significant revisions made throughout the text Features contributions from engineers and scientists leading the fields of optics and photonics today With the addition of a second editor, the Encyclopedia of Optical and Photonic Engineering, Second Edition offers a balanced and up-to-date look at the fundamentals of a diverse portfolio of technologies

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and discoveries in areas ranging from x-ray optics to photon entanglement and beyond. This edition ' s release corresponds nicely with the United Nations General Assembly ' s declaration of 2015 as the International Year of Light, working in tandem to raise awareness about light ' s important role in the modern world. Also Available Online This Taylor & Francis encyclopedia is also available through online subscription, offering a variety of extra benefits for researchers, students, and librarians, including: Citation tracking and alerts Active reference linking

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reference@taylorandfrancis.com
International: (Tel) +44 (0) 20
7017 6062; (E-mail)
online.sales@tandf.co.uk
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

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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.

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Computational Fourier Optics is a text that shows the reader in a tutorial form how to implement Fourier optical theory and analytic methods on the computer. A primary objective is to give students of Fourier optics the capability of programming their own basic wave optic beam propagations and imaging simulations. The book will also be of interest to professional engineers and physicists learning Fourier optics simulation techniques-either as a self-study text or a text for a short course. For more advanced study, the latter chapters and appendices provide methods and

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examples for modeling beams and pupil functions with more complicated structure, aberrations, and partial coherence. For a student in a course on Fourier optics, this book is a concise, accessible, and practical companion to any of several excellent textbooks on Fourier optical theory.

This book constitutes the refereed proceedings of the The International Workshop on Optical SuperComputing, OSC 2008, held in Vienna, Austria, August 2008 in conjunction with the 7th International Conference on Unconventional Computation UC 2008. OCS is a new annual

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forum for research presentations on all facets of optical computing for solving hard computation tasks. Topics of interest include, but are not limited to: Design of optical computing devices, electrooptics devices for interacting with optical computing devices, practical implementations, analysis of existing devices and case studies, optical and laser switching technologies, applications and algorithms for optical devices, alpha practical, x-rays and nano-technologies for optical computing.

Handbook of Silicon Photonics
Acoustical Imaging

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Principles and Applications of
Fourier Optics

Engineering Applications of
Noncommutative Harmonic
Analysis

Numerical Simulation of Optical
Wave Propagation with
Examples in MATLAB

**Diffractive Optics and
Nanophotonics is devoted to
achievements in diffractive
optics, focusing on the
creation of new
nanophotonic components
and devices, as well as
instrumentation and
available information
technology. The author
describes methods of**

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calculation of diffractive optical elements to solve actual problems of nanophotonics. Coverage includes mathematical methods for calculation of diffraction gratings, calculation of modes of inhomogeneous waveguides, integral methods of calculation of electromagnetic field near the focus, and methods of calculation of diffractive optical elements generating vortex laser beams. The Workshop on Hybrid Formulations of Wave Propagation and Scattering

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underwent a sequence of iterations before emerging in the format recorded here. These iterations were caused by various administrative and logistical problems which need not be detailed. However, its direction being set initially, the iterations led to modifications of the original concept so that the final form was arrived at through an indirect approach. This circumstance may explain some possible deficiencies which might have been removed, had the final concept been implemented

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directly. The motivation arose from a perception that the newly restored interest, coupled with new developments, in hybrid methods employing progressing wave fields and oscillatory wave fields for time harmonic and transient guided propagation in manmade or general geophysical environments, and for scattering by targets and irregularities, merits exposure to the wider scientific community. Accordingly, a meeting with highly tutorial content was envisaged. For

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administrative reasons, related to sponsorship and organizational structure, this objective could not be realized but, eventually, there emerged the possibility of convening an Advanced Research Workshop (ARW) under the auspices of the NATO Advanced Study Institute Series. The original concept was then modified to accommodate a Workshop, wherein state-of-the-art science is discussed by a relatively small group of specialists, instead of tutorial presentations of

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**more basic material.
Biomedical optics holds
tremendous promise to
deliver effective, safe, non-
or minimally invasive
diagnostics and targeted,
customizable therapeutics.
Handbook of Biomedical
Optics provides an in-depth
treatment of the field,
including coverage of
applications for biomedical
research, diagnosis, and
therapy. It introduces the
theory and fundamental
Introduction to Fourier
Optics McGraw-Hill
Companies
Indian Journal of Pure &**

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**Applied Physics
First International
Workshop, OSC 2008,
Vienna, Austria, August 26,
2008, Proceedings
A Matlab Tutorial
Encyclopedia of Optical and
Photonic Engineering (Print)
- Five Volume Set
Fourier Methods in Imaging
Advances in Imaging and
Electron Physics merges two
long-running serials,
Advances in Electronics and
Electron Physics and
Advances in Optical and
Electron Microscopy. The
series features extended
articles on the physics of
electron devices (especially**

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semiconductor devices), particle optics at high and low energies, microlithography, image science, digital image processing, electromagnetic wave propagation, electron microscopy, and the computing methods used in all these domains. Contains contributions from leading authorities on the subject matter Informs and updates all the latest developments in the field of imaging and electron physics Provides practitioners interested in microscopy, optics, image processing, mathematical morphology, electromagnetic fields, electron, and ion emission with a valuable resource Features extended

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articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science, and digital image processing

A comprehensive review of the state of the art and advances in the field, while also outlining the future potential and development trends of optical imaging and optical metrology, an area of fast growth with numerous applications in nanotechnology and nanophysics. Written by the world's leading experts in the field, it fills the gap in the current literature by bridging the fields of optical imaging

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and metrology, and is the only up-to-date resource in terms of fundamental knowledge, basic concepts, methodologies, applications, and development trends. This book presents a comprehensive and coherent summary of techniques for enhancing the resolution and image contrast provided by far-field optical microscopes. It takes a critical look at the body of knowledge that comprises optical microscopy, compares and contrasts the various instruments, provides a clear discussion of the physical principles that underpin these techniques, and describes advances in science and medicine for

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which superresolution microscopes are required and are making major contributions. The text fills significant gaps that exist in other works on superresolution imaging, firstly by placing a new emphasis on the specimen, a critical component of the microscope setup, giving equal importance to the enhancement of both resolution and contrast. Secondly, it covers several topics not typically discussed in depth, such as Bessel and Airy beams, the physics of the spiral phase plate, vortex beams and singular optics, photoactivated localization microscopy (PALM),

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stochastic optical reconstruction microscopy (STORM), structured illumination microscopy (SIM), and light-sheet fluorescence microscopy (LSFM). Several variants of these techniques are critically discussed. Noise, optical aberrations, specimen damage, and artifacts in microscopy are also covered. The importance of validation of superresolution images with electron microscopy is stressed. Additionally, the book includes translations and discussion of seminal papers by Abbe and Helmholtz that proved to be pedagogically relevant as well as historically significant. This book is written for students,

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researchers, and engineers in the life sciences, medicine, biological engineering, and materials science who plan to work with or already are working with superresolution light microscopes. The volume can serve as a reference for these areas while a selected set of individual chapters can be used as a textbook for a one-semester undergraduate or first-year graduate course on superresolution microscopy. Moreover, the text provides a captivating account of curiosity, skepticism, risk-taking, innovation, and creativity in science and technology. Good scientific practice is emphasized throughout, and

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the author's lecture slides on responsible conduct of research are included as an online resource which will be of interest to students, course instructors, and scientists alike.

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,

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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

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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.

Introduction to Optics

Particles and Waves in

Electron Optics and

Microscopy

Digital Microscopy

Hybrid Formulation of Wave

Propagation and Scattering

Diffractive Optics and

Nanophotonics

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This book demonstrates the concept of Fourier ptychography, a new imaging technique that bypasses the resolution limit of the employed optics. In particular, it transforms the general challenge of high-throughput, high-resolution imaging from one that is coupled to the physical limitations of the optics to one that is solvable through computation.

Demonstrated in a tutorial form and providing many MATLAB® simulation examples for the reader, it also discusses the experimental implementation and recent developments of Fourier ptychography. This book will be

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of interest to researchers and engineers learning simulation techniques for Fourier optics and the Fourier ptychography concept.

This volume represents the proceedings of the 21 st International Symposium on Acoustical Imaging, which was held at the Surf and Sand Hotel in Laguna Beach, California, March 28-30, 1994. These unique and highly interdisciplinary series of symposiums have met at intervals of roughly 18 months over the past 30 some years. In general these meetings are devoted to all aspects and all

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fields of imaging that use acoustics. The meetings are usually small, with 100 to 200 participants, and stimulate useful interchanges across disciplines. These are the only regular meetings where the major researchers in all areas of acoustical imaging can come together to interchange ideas and new concepts. The Acoustical Imaging Symposiums have long been regarded as the premier meeting of this type in the general field of acoustics. The highly regarded and carefully edited proceedings have been published regularly by Plenum Press. I am proud and

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honored to serve as editor of the 21st volume in this series. The 21st Symposium was attended by well over 100 participants from some 18 countries. During the three day symposium, 94 scientific presentations were given, 66 as formal lectures and 28 in a poster format. Sufficient time was available during the conference, both following the presentations and informally during meals and breaks, for active discussions among all participants. Over 80 of the presentations have been selected for inclusion in these proceedings.

This dedicated overview of

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optical compressive imaging addresses implementation aspects of the revolutionary theory of compressive sensing (CS) in the field of optical imaging and sensing. It overviews the technological opportunities and challenges involved in optical design and implementation, from basic theory to optical architectures and systems for compressive imaging in various spectral regimes, spectral and hyperspectral imaging, polarimetric sensing, three-dimensional imaging, super-resolution imaging, lens-free, on-chip microscopy, and phase

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sensing and retrieval. The reader will gain a complete introduction to theory, experiment, and practical use for reducing hardware, shortening image scanning time, and improving image resolution as well as other performance parameters. Optics practitioners and optical system designers, electrical and optical engineers, mathematicians, and signal processing professionals will all find the book a unique trove of information and practical guidance. Delivers the first book on compressed sensing dealing with system development for a wide variety of optical imaging and sensing applications. Covers

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the fundamentals of CS theory, including noise and algorithms, as well as basic design approaches for data acquisition in optics. Addresses the challenges of implementing compressed sensing theory in the context of different optical imaging designs, from 3D imaging to tomography and microscopy. Provides an essential resource for the design of new and improved devices with improved image quality and shorter acquisition times. Adrian Stern, PhD, is associate professor and head of the Electro-Optical Engineering Unit at Ben-Gurion University of the

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*Negev, Israel. He is an elected
Fellow of SPIE.*

*This work offers comprehensive
coverage of all aspects of spatial
light modulators, from the
various optical materials used for
modulation, through the
availability and characteristics of
specific devices, to the main
applications of SLMs and related
systems. The gamut of SLMs is
surveyed, including multiple-
quantum-well, acousto-optical,
magneto-optical, deformable-
membrane, ferroelectric-liquid-
crystal and smart-pixel
modulators.*

*Principles and Applications
Advanced Technologies*

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*Optical Computing: An
Introduction*

*Contemporary Optical Image
Processing with MATLAB*

*X-Rays and Extreme Ultraviolet
Radiation*

*Presents a fully updated,
self-contained textbook
covering the core theory
and practice of both
classical and modern
optical microscopy
techniques.*

*Numerical Simulation of
Optical Wave Propagation
is solely dedicated to
wave-optics simulations.*

*The book discusses digital
Fourier transforms (FT),
FT-based operations,*

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multiple methods of wave-optics simulations, sampling requirements, and simulations in atmospheric turbulence.

This much-needed text brings the treatment of optical pattern recognition up-to-date in one comprehensive resource. Optical pattern recognition, one of the first implementations of Fourier Optics, is now widely used, and this text provides an accessible introduction for readers who wish to get to grips with how holography is applied in a practical

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context. A wide range of devices are addressed from a user perspective and are accompanied with detailed tables enabling performance comparison, in addition to chapters exploring computer-generated holograms, optical correlator systems, and pattern matching algorithms. This book will appeal to both lecturers and research scientists in the field of electro-optic devices and systems. Features: Covers a range of new developments, including computer-generated

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holography and 3D image recognition Accessible without a range of prior knowledge, providing a clear exposition of technically difficult concepts Contains extensive examples throughout to reinforce learning

The development of integrated silicon photonic circuits has recently been driven by the Internet and the push for high bandwidth as well as the need to reduce power dissipation induced by high data-rate signal transmission. To reach

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these goals, efficient
passive and active silicon
photonic devices,
including waveguide,
modulators,

photodetectors,

Optical SuperComputing

A MATLAB Tutorial

Fourier Optics in Image
Processing

The Quest for Enhanced
Resolution and Contrast

Fundamentals of Photonics

***First published in 2001. The classical
Fourier transform is one of the most
widely used mathematical tools in
engineering. However, few engineers
know that extensions of harmonic
analysis to functions on groups holds
great potential for solving problems in
robotics, image analysis, mechanics, and***

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other areas. For those that may be aware of its potential value, there is still no place they can turn to for a clear presentation of the background they need to apply the concept to engineering problems. Engineering Applications of Noncommutative Harmonic Analysis brings this powerful tool to the engineering world. Written specifically for engineers and computer scientists, it offers a practical treatment of harmonic analysis in the context of particular Lie groups (rotation and Euclidean motion). It presents only a limited number of proofs, focusing instead on providing a review of the fundamental mathematical results unknown to most engineers and detailed discussions of specific applications. Advances in pure mathematics can lead to very tangible advances in engineering, but only if they are available and accessible to engineers.

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Engineering Applications of Noncommutative Harmonic Analysis provides the means for adding this valuable and effective technique to the engineer's toolbox.

This textbook deals with fourier analysis applications in optics, and in particular with its applications to diffraction, imaging, optical data processing, holography and optical communications. Fourier analysis is a universal tool that has found application within a wide range of areas in physics and engineering and this third edition has been written to help your students understand the complexity of a subject that can be challenging to grasp at times. Chapters cover foundations of scalar diffraction theory, Fresnel and Fraunhofer diffraction moving onto Wave-Optics Analysis of Coherent Optical Systems and Wavefront

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Modulation. Joseph Goodman's work in Electrical Engineering has been recognised by a variety of awards and honours, so his text is able to guide students through a comprehensive introduction into Fourier Optics.

This book presents current theories of diffraction, imaging, and related topics based on Fourier analysis and synthesis techniques, which are essential for understanding, analyzing, and synthesizing modern imaging, optical communications and networking, as well as micro/nano systems. Applications covered include tomography; magnetic resonance imaging; synthetic aperture radar (SAR) and interferometric SAR; optical communications and networking devices; computer-generated holograms and analog holograms; and wireless systems using EM waves.

The previous edition of this book marked

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the shift in technology from video to digital camera use with microscope use in biological science. This new edition presents some of the optical fundamentals needed to provide a quality image to the digital camera. Specifically, it covers the fundamental geometric optics of finite- and infinity-corrected microscopes, develops the concepts of physical optics and Abbe's theory of image formation, presents the principles of Kohler illumination, and finally reviews the fundamentals of fluorescence and fluorescence microscopy. The second group of chapters deals with digital and video fundamentals: how digital and video cameras work, how to coordinate cameras with microscopes, how to deal with digital data, the fundamentals of image processing, and low light level cameras. The third group of chapters address some specialized areas of

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microscopy that allow sophisticated measurements of events in living cells that are below the optical limits of resolution. Expands coverage to include discussion of confocal microscopy not found in the previous edition Includes "traps and pitfalls" as well as laboratory exercises to help illustrate methods

Diffraction, Fourier Optics and Imaging

Optical Imaging and Metrology

Principles of Optics

Physics of Light and Optics (Black & White)

Fourier Methods in Imaging introduces the mathematical tools for modeling linear imaging systems to predict the action of the system or for solving for the input. The chapters are grouped into five sections, the first

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introduces the imaging “tasks” (direct, inverse, and system analysis), the basic concepts of linear algebra for vectors and functions, including complex-valued vectors, and inner products of vectors and functions. The second section defines "special" functions, mathematical operations, and transformations that are useful for describing imaging systems. Among these are the Fourier transforms of 1-D and 2-D function, and the Hankel and Radon transforms. This section also considers approximations of the Fourier transform. The third and fourth sections examine the

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discrete Fourier transform and the description of imaging systems as linear "filters", including the inverse, matched, Wiener and Wiener-Helstrom filters. The final section examines applications of linear system models to optical imaging systems, including holography. Provides a unified mathematical description of imaging systems. Develops a consistent mathematical formalism for characterizing imaging systems. Helps the reader develop an intuitive grasp of the most common mathematical methods, useful for describing the action of general linear systems on

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signals of one or more spatial dimensions. Offers parallel descriptions of continuous and discrete cases. Includes many graphical and pictorial examples to illustrate the concepts. This book helps students develop an understanding of mathematical tools for describing general one- and two-dimensional linear imaging systems, and will also serve as a reference for engineers and scientists. A complete and balanced account of communication theory, providing an understanding of both Fourier analysis (and the concepts associated with linear systems)

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and the characterization of such systems by mathematical operators. Presents applications of the theories to the diffraction of optical wave-fields and the analysis of image-forming systems. Emphasizes a strong mathematical foundation and includes an in-depth consideration of the phenomena of diffraction. Combines all theories to describe the image-forming process in terms of a linear filtering operation for both coherent and incoherent imaging. Chapters provide carefully designed sets of problems. Also includes extensive tables of properties

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and pairs of Fourier transforms and Hankle Transforms.

This renowned text applies the powerful mathematical methods of fourier analysis to the analysis and synthesis of optical systems. These ubiquitous mathematical tools provide unique insights into the capabilities and limitations of optical systems in both imaging and information processing and lead to many fascinating applications, including the field of holography.

With this fully updated second edition, readers will gain a detailed understanding of the physics and applications of modern X-ray and EUV radiation

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sources. Taking into account the most recent improvements in capabilities, coverage is expanded to include new chapters on free electron lasers (FELs), laser high harmonic generation (HHG), X-ray and EUV optics, and nanoscale imaging; a completely revised chapter on spatial and temporal coherence; and extensive discussion of the generation and applications of femtosecond and attosecond techniques. Readers will be guided step by step through the mathematics of each topic, with over 300 figures, 50 reference tables and 600 equations enabling easy

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understanding of key concepts. Homework problems, a solutions manual for instructors, and links to YouTube lectures accompany the book online. This is the 'go-to' guide for graduate students, researchers and industry practitioners interested in X-ray and EUV interaction with matter.

Introduction to Inverse Problems in Imaging
Materials, Devices, and Applications
Principles of Optics for Engineers
Fourier Ptychographic Imaging
Handbook of Biomedical Optics
This book discusses statistical methods that are useful for treating

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problems in modern optics, and the application of these methods to solving a variety of such problems
This book covers a variety of statistical problems in optics, including both theory and applications. The text covers the necessary background in statistics, statistical properties of light waves of various types, the theory of partial coherence and its applications, imaging with partially coherent light, atmospheric degradations of images, and noise limitations in the detection of light. New topics have been introduced in the second edition, including:
Analysis of the Vander Pol oscillator model of laser light
Coverage on coherence tomography and coherence multiplexing of fiber sensors
An

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expansion of the chapter on imaging with partially coherent light, including several new examples An expanded section on speckle and its properties New sections on the cross-spectrum and bispectrum techniques for obtaining images free from atmospheric distortions A new section on imaging through atmospheric turbulence using coherent light The addition of the effects of “read noise” to the discussions of limitations encountered in detecting very weak optical signals A number of new problems and many new references have been added Statistical Optics, Second Edition is written for researchers and engineering students interested in optics, physicists and chemists, as well as

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graduate level courses in a University Engineering or Physics Department.

Fourier optics, being a staple of optical design and analysis for over 50 years, has produced many new applications in recent years. In this text, Bob Tyson presents the fundamentals of Fourier optics with sufficient detail to educate the reader, typically an advanced student or working scientist or engineer, to the level of applying the knowledge to a specific set of design or analysis problems. Well aware that many of the mathematical techniques used in the field can now be solved digitally, the book will point to those methods or applicable computer software available to the reader.

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Fundamentals of Photonics A complete, thoroughly updated, full-color third edition Fundamentals of Photonics, Third Edition is a self-contained and up-to-date introductory-level textbook that thoroughly surveys this rapidly expanding area of engineering and applied physics. Featuring a blend of theory and applications, coverage includes detailed accounts of the primary theories of light, including ray optics, wave optics, electromagnetic optics, and photon optics, as well as the interaction of light and matter. Presented at increasing levels of complexity, preliminary sections build toward more advanced topics, such as Fourier optics and holography, photonic-crystal optics, guided-wave and fiber

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optics, LEDs and lasers, acousto-optic and electro-optic devices, nonlinear optical devices, ultrafast optics, optical interconnects and switches, and optical fiber communications. The third edition features an entirely new chapter on the optics of metals and plasmonic devices. Each chapter contains highlighted equations, exercises, problems, summaries, and selected reading lists. Examples of real systems are included to emphasize the concepts governing applications of current interest. Each of the twenty-four chapters of the second edition has been thoroughly updated.

***Statistical Optics
Linear Systems, Fourier
Transforms, and Optics
Diffraction and Modal Analysis***

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***Superresolution Optical Microscopy
Spatial Light Modulator Technology***