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KEY=EDITION - MATTHEWS EMERSON

MATHEMATICAL METHODS FOR PHYSICISTS

Academic Press This volume contains the essential mathematical tools and techniques used to solve problems in physics. A useful textbook for all serious undergraduate students of physics. This fifth edition has a new art programme throughout the book; additional new and improved exercises; updated references for computational techniques for using Numerical Recipes and Mathematica TM; and there is a reference compendium for important mathematical methods used in physics.

ESSENTIAL MATHEMATICAL METHODS FOR PHYSICISTS

Academic Press This adaptation of Arfken and Weber's bestselling 'Mathematical Methods for Physicists' is a comprehensive, accessible reference for using mathematics to solve physics problems. Introductions and review material provide context and extra support for key ideas, with detailed examples.

MATHEMATICAL METHODS FOR PHYSICISTS

A COMPREHENSIVE GUIDE

Academic Press Providing coverage of the mathematics necessary for advanced study in physics and engineering, this text focuses on problem-solving skills and offers a vast array of exercises, as well as clearly illustrating and proving mathematical relations.

MATHEMATICAL METHODS FOR PHYSICISTS INTERNATIONAL STUDENT EDITION

Elsevier This best-selling title provides in one handy volume the essential mathematical tools and techniques used to solve problems in physics. It is a vital addition to the bookshelf of any serious student of physics or research professional in the field. The authors have put considerable effort into revamping this new edition. Updates the leading graduate-level text in mathematical physics Provides comprehensive coverage of the mathematics necessary for advanced study in physics and engineering Focuses on problem-solving skills and offers a vast array of exercises Clearly illustrates and proves mathematical relations New in the Sixth Edition: Updated content throughout, based on users' feedback More advanced sections, including differential forms and the elegant forms of Maxwell's equations A new chapter on probability and statistics More elementary sections have been deleted

ESSENTIAL MATHEMATICAL METHODS FOR PHYSICISTS

AND ENGINEERS

Academic Press This new adaptation of Arfken and Weber's bestselling *Mathematical Methods for Physicists, Fifth Edition*, is the most comprehensive, modern, and accessible text for using mathematics to solve physics problems. Additional explanations and examples make it student-friendly and more adaptable to a course syllabus. KEY FEATURES: · This is a more accessible version of Arfken and Weber's blockbuster reference, *Mathematical Methods for Physicists, 5th Edition* · Many more detailed, worked-out examples illustrate how to use and apply mathematical techniques to solve physics problems · More frequent and thorough explanations help readers understand, recall, and apply the theory · New introductions and review material provide context and extra support for key ideas · Many more routine problems reinforce basic concepts and computations

TRANSFER OF POLARIZED LIGHT IN PLANETARY ATMOSPHERES

BASIC CONCEPTS AND PRACTICAL METHODS

Springer Science & Business Media The principal elements of the theory of polarized light transfer in planetary atmospheres are expounded in a systematic but concise way. Basic concepts and practical methods are emphasized, both for single and multiple scattering of electromagnetic radiation by molecules and particles in the atmospheres of planets in the Solar System, including the Earth, and beyond. A large part of the book is also useful for studies of light scattering by particles in comets, the interplanetary and interstellar medium, circumstellar disks, reflection nebulae, water bodies like oceans and suspensions of particles in a gas or liquid in the laboratory. Throughout the book symmetry principles, such as the reciprocity principle and the mirror symmetry principle, are employed. In this way the theory is made more transparent and easier to understand than in most papers on the subject. In addition, significant computational reductions, resulting from symmetry

principles, are presented. Hundreds of references to relevant literature are given at the end of the book. Appendices contain supplementary information such as a general exposition on properties of matrices transforming Stokes parameters of light beams. Each chapter concludes with a number of problems with answers or hints for solution. The readers should have some basic knowledge of physics and mathematics. The book is suitable as a textbook for advanced undergraduates and graduate students. It will also be of interest to science professionals in one of the many disciplines in which electromagnetic scattering plays an important role, like astrophysics, atmospheric optics, remote sensing, marine optics, biophysics and biomedicine.

MATHEMATICAL METHODS FOR PHYSICS AND ENGINEERING

A COMPREHENSIVE GUIDE

Cambridge University Press The third edition of this highly acclaimed undergraduate textbook is suitable for teaching all the mathematics for an undergraduate course in any of the physical sciences. As well as lucid descriptions of all the topics and many worked examples, it contains over 800 exercises. New stand-alone chapters give a systematic account of the 'special functions' of physical science, cover an extended range of practical applications of complex variables, and give an introduction to quantum operators. Further tabulations, of relevance in statistics and numerical integration, have been added. In this edition, half of the exercises are provided with hints and answers and, in a separate manual available to both students and their teachers, complete worked solutions. The remaining exercises have no hints, answers or worked solutions and can be used for unaided homework; full solutions are available to instructors on a password-protected web site, www.cambridge.org/9780521679718.

DATA ANALYSIS FOR SCIENTISTS AND ENGINEERS

Princeton University Press Data Analysis for Scientists and Engineers is a modern, graduate-level text on data analysis techniques for physical science and engineering students as well as working scientists and engineers. Edward Robinson emphasizes the principles behind various techniques so that practitioners can adapt them to their own problems, or develop new techniques when necessary. Robinson divides the book into three sections. The first section covers basic concepts in probability and includes a chapter on Monte Carlo methods with an extended discussion of Markov chain Monte Carlo sampling. The second section introduces statistics and then develops tools for fitting models to data, comparing and contrasting techniques from both frequentist and Bayesian perspectives. The final section is devoted to methods for analyzing sequences of data, such as correlation functions, periodograms, and image reconstruction. While it goes beyond elementary statistics, the text is self-contained and accessible to readers from a wide variety of backgrounds. Specialized mathematical topics are included in an appendix. Based on a graduate course on data analysis that the author has taught for many years, and couched in the looser, workaday language of scientists and engineers who wrestle

directly with data, this book is ideal for courses on data analysis and a valuable resource for students, instructors, and practitioners in the physical sciences and engineering. In-depth discussion of data analysis for scientists and engineers Coverage of both frequentist and Bayesian approaches to data analysis Extensive look at analysis techniques for time-series data and images Detailed exploration of linear and nonlinear modeling of data Emphasis on error analysis Instructor's manual (available only to professors)

NUMERICAL METHODS AND APPLICATIONS

8TH INTERNATIONAL CONFERENCE, NMA 2014, BOROVELTS, BULGARIA, AUGUST 20-24, 2014, REVISED SELECTED PAPERS

Springer This book constitutes the thoroughly refereed post-conference proceedings of the 8th International Conference on Numerical Methods and Applications, NMA 2014, held in Borovets, Bulgaria, in August 2014. The 34 revised full papers presented were carefully reviewed and selected from 56 submissions for inclusion in this book. The papers are organized in the following topical sections: Monte Carlo and quasi-Monte Carlo methods; metaheuristics for optimization problems; advanced numerical methods for scientific computing; advanced numerical techniques for PDEs and applications; solving large engineering and scientific problems with advanced mathematical models; numerical simulations and back analysis in civil and mechanical engineering.

SPHERICAL HARMONICS IN P DIMENSIONS

World Scientific The current book makes several useful topics from the theory of special functions, in particular the theory of spherical harmonics and Legendre polynomials in arbitrary dimensions, available to undergraduates studying physics or mathematics. With this audience in mind, nearly all details of the calculations and proofs are written out, and extensive background material is covered before exploring the main subject matter. Contents: Introduction and Motivation Working in p Dimensions Orthogonal Polynomials Spherical Harmonics in p Dimensions Solutions to Problems Readership: Undergraduate and graduate students in mathematical physics and differential equations. Key Features: Accessible to everyone (including undergraduate students who have some knowledge in mathematics) Presents a topic that, although well-studied, is not widely disseminated in books Solutions to all end-of-chapter problems with all the necessary details are given in the final chapter of the book Keywords: Spherical Harmonics; Special Functions; Mathematical Physics; Green's Functions; Legendre Polynomials

ZETA AND Q-ZETA FUNCTIONS AND ASSOCIATED SERIES AND INTEGRALS

Elsevier Zeta and q-Zeta Functions and Associated Series and Integrals is a thoroughly revised, enlarged and updated version of Series Associated with the Zeta and Related Functions. Many of the chapters and sections of the book have been significantly modified or rewritten, and a new chapter on the theory and applications

of the basic (or q-) extensions of various special functions is included. This book will be invaluable because it covers not only detailed and systematic presentations of the theory and applications of the various methods and techniques used in dealing with many different classes of series and integrals associated with the Zeta and related functions, but stimulating historical accounts of a large number of problems and well-classified tables of series and integrals. Detailed and systematic presentations of the theory and applications of the various methods and techniques used in dealing with many different classes of series and integrals associated with the Zeta and related functions

ELEMENTS OF GREEN'S FUNCTIONS AND PROPAGATION

POTENTIALS, DIFFUSION, AND WAVES

Oxford University Press Takes the student with a background in the undergraduate courses in physics and mathematics towards the skills needed for graduate work in theoretical physics. The author uses Green's functions to explore the physics of potentials, diffusion and waves. Case histories illustrate the interplay between physical insight and mathematical formalism.

SCATTERING AND BIOMEDICAL ENGINEERING

MODELING AND APPLICATIONS

World Scientific This volume deals with scattering theory, applied mathematics, modeling and biomedical engineering. Most of the papers describe mathematical methods, numerical solutions and models for well-known problems in those areas. The proceedings have been selected for coverage in: • Index to Scientific & Technical Proceedings (ISTP CDROM version / ISI Proceedings) Contents: Uniqueness in Inverse Obstacle Engineering (R Kress) Electromagnetic Detection of Buried Spheroidal Objects (C A Anagnostopoulos et al.) Point Source Excitation in Electromagnetic Low-Frequency Scattering: Impedance Boundary Value Problem for a Sphere (G Venkov & I Arnaoudov) Micromagnetic Simulations and Applications (T Schrefl et al.) On the Wave Propagation in Concrete (D G Aggelis et al.) On the Interior Transmission Problem in Linear Elasticity (A Charalambopoulos et al.) A Note on the Method of Analytical Regularization (G Fikioris) Particle Swarm Optimization for Imprecise Problems (K E Parsopoulos & M N Vrahatis) Static Fundamental Solution in 3-D Gradient Elasticity (K G Tsepoura et al.) Global Optimization Approaches to Reconstruction of Dynamical Systems Related to Epileptic Seizures 1 (L D Iasemidis et al.) Human Head Interaction with Mobile Phones: The Spheroidal Head Model (D Kourounis et al.) Linear and Nonlinear Approaches for Cardiotocogram Data Prediction (A Koutras et al.) Optimal Material Design Versus Bone Modeling (G E Stavroulakis) and other papers Readership: Researchers and graduate students in biomechanical engineering, biomechanics, engineering and applied mathematics. Keywords:

CLASSICAL DYNAMICS

A CONTEMPORARY APPROACH

Cambridge University Press Advances in the study of dynamical systems have revolutionized the way that classical mechanics is taught and understood. *Classical Dynamics*, first published in 1998, is a comprehensive textbook that provides a complete description of this fundamental branch of physics. The authors cover all the material that one would expect to find in a standard graduate course: Lagrangian and Hamiltonian dynamics, canonical transformations, the Hamilton-Jacobi equation, perturbation methods, and rigid bodies. They also deal with more advanced topics such as the relativistic Kepler problem, Liouville and Darboux theorems, and inverse and chaotic scattering. A key feature of the book is the early introduction of geometric (differential manifold) ideas, as well as detailed treatment of topics in nonlinear dynamics (such as the KAM theorem) and continuum dynamics (including solitons). The book contains many worked examples and over 200 homework exercises. It will be an ideal textbook for graduate students of physics, applied mathematics, theoretical chemistry, and engineering, as well as a useful reference for researchers in these fields. A solutions manual is available exclusively for instructors.

ATOMIC AND MOLECULAR PHYSICS

ALPHA SCIENCE INTERNATIONAL LIMITED *ATOMIC AND MOLECULAR PHYSICS: Introduction to Advanced Topics* introduces advanced topics of Atomic and Molecular Collision Physics covering Atomic structure calculations, Photoionization of atomic systems, Electron-atom collisions, Ion-atom collisions, Collisions involving exotic particles, Ultracold atoms and Bose-Einstein condensation as well as Atomic data and Plasma diagnostics. This volume is very useful to start research in theoretical and experimental Atomic and Molecular Physics. The book is also helpful to those working in interrelated research areas like Laser physics, Astrophysics and Plasma and Fusion research where such a background of theoretical Atomic Collision Physics is an integral part.

MATHEMATICS FOR PHYSICISTS

Courier Corporation Superb text provides math needed to understand today's more advanced topics in physics and engineering. Theory of functions of a complex variable, linear vector spaces, much more. Problems. 1967 edition.

TABLE OF INTEGRALS, SERIES, AND PRODUCTS

Academic Press *Table of Integrals, Series, and Products* provides information pertinent to the fundamental aspects of integrals, series, and products. This book provides a comprehensive table of integrals. Organized into 17 chapters, this book begins with an overview of elementary functions and discusses the power of binomials, the exponential function, the logarithm, the hyperbolic function, and the inverse trigonometric function. This text then presents some basic results on vector operators and coordinate systems that are likely to be useful during the formulation of many problems. Other chapters consider inequalities that range from basic

algebraic and functional inequalities to integral inequalities and fundamental oscillation and comparison theorems for ordinary differential equations. This book discusses as well the important part played by integral transforms. The final chapter deals with Fourier and Laplace transforms that provides so much information about other integrals. This book is a valuable resource for mathematicians, engineers, scientists, and research workers.

MATHEMATICAL METHODS FOR PHYSICISTS AND ENGINEERS

SECOND CORRECTED EDITION

Courier Corporation Practical text focuses on fundamental applied math needed to deal with physics and engineering problems: elementary vector calculus, special functions of mathematical physics, calculus of variations, much more. 1968 edition.

MAGNETIC STIMULATION IN CLINICAL NEUROPHYSIOLOGY

Elsevier Health Sciences Covers the diagnostic and clinical applications of transcranial magnetic stimulation (TMS) and offers cutting-edge, in-depth guidance on the use of TMS to study brain physiology and pathophysiology as well as its current and future therapeutic uses. Readers will find the essential up-to-date information they need to make the most of this dynamic method. Delivers a detailed analysis of the physics of magnetic stimulation as well as basic mechanisms of how magnetic stimulation activates neural tissue. Presents expert guidance on the clinical uses of TMS as well as its therapeutic and research applications.

THE FINITE VOLUME METHOD IN COMPUTATIONAL FLUID DYNAMICS

AN ADVANCED INTRODUCTION WITH OPENFOAM® AND MATLAB

Springer This textbook explores both the theoretical foundation of the Finite Volume Method (FVM) and its applications in Computational Fluid Dynamics (CFD). Readers will discover a thorough explanation of the FVM numerics and algorithms used for the simulation of incompressible and compressible fluid flows, along with a detailed examination of the components needed for the development of a collocated unstructured pressure-based CFD solver. Two particular CFD codes are explored. The first is uFVM, a three-dimensional unstructured pressure-based finite volume academic CFD code, implemented within Matlab. The second is OpenFOAM®, an open source framework used in the development of a range of CFD programs for the simulation of industrial scale flow problems. With over 220 figures, numerous examples and more than one hundred exercise on FVM numerics, programming, and applications, this textbook is suitable for use in an introductory course on the FVM, in an advanced course on numerics, and as a reference for CFD programmers and researchers.

INTRODUCTION TO QUANTUM MECHANICS

Cambridge University Press This bestselling textbook teaches students how to do quantum mechanics and provides an insightful discussion of what it actually means.

QUANTUM THEORY, GROUPS AND REPRESENTATIONS

AN INTRODUCTION

Springer This text systematically presents the basics of quantum mechanics, emphasizing the role of Lie groups, Lie algebras, and their unitary representations. The mathematical structure of the subject is brought to the fore, intentionally avoiding significant overlap with material from standard physics courses in quantum mechanics and quantum field theory. The level of presentation is attractive to mathematics students looking to learn about both quantum mechanics and representation theory, while also appealing to physics students who would like to know more about the mathematics underlying the subject. This text showcases the numerous differences between typical mathematical and physical treatments of the subject. The latter portions of the book focus on central mathematical objects that occur in the Standard Model of particle physics, underlining the deep and intimate connections between mathematics and the physical world. While an elementary physics course of some kind would be helpful to the reader, no specific background in physics is assumed, making this book accessible to students with a grounding in multivariable calculus and linear algebra. Many exercises are provided to develop the reader's understanding of and facility in quantum-theoretical concepts and calculations.

MATRIX METHODS

AN INTRODUCTION

Academic Press Matrix Methods: An Introduction is a nine-chapter text that emphasizes the methodological aspects of mathematical matrices. This book is intended for an introductory course in matrices similar to those given to sophomore and junior engineering students at Fairleigh Dickinson University. The first five chapters deal with the elementary aspects of matrices, including their definition, determinants, method of inversion, simultaneous linear equations, eigenvalues, and eigenvectors. The remaining chapters explore the materials of fundamental importance to both engineers and scientists. These chapters discuss the principles of matrix calculus, linear differential equations, Jordan canonical forms, and special matrices. A set of exercises is provided at the end of each section, which is basically routine in nature and serves primarily to enhance the reader's ability to use the methods just presented. On occasion, problems are assigned that will extend or complete topics previously introduced. This book is intended primarily for science, engineering, and applied mathematics students.

STOCHASTICITY IN PROCESSES

FUNDAMENTALS AND APPLICATIONS TO CHEMISTRY AND BIOLOGY

Springer This book has developed over the past fifteen years from a modern course on stochastic chemical kinetics for graduate students in physics, chemistry and biology. The first part presents a systematic collection of the mathematical

background material needed to understand probability, statistics, and stochastic processes as a prerequisite for the increasingly challenging practical applications in chemistry and the life sciences examined in the second part. Recent advances in the development of new techniques and in the resolution of conventional experiments at nano-scales have been tremendous: today molecular spectroscopy can provide insights into processes down to scales at which current theories at the interface of physics, chemistry and the life sciences cannot be successful without a firm grasp of randomness and its sources. Routinely measured data is now sufficiently accurate to allow the direct recording of fluctuations. As a result, the sampling of data and the modeling of relevant processes are doomed to produce artifacts in interpretation unless the observer has a solid background in the mathematics of limited reproducibility. The material covered is presented in a modular approach, allowing more advanced sections to be skipped if the reader is primarily interested in applications. At the same time, most derivations of analytical solutions for the selected examples are provided in full length to guide more advanced readers in their attempts to derive solutions on their own. The book employs uniform notation throughout, and a glossary has been added to define the most important notions discussed.

RECENT ADVANCES IN INTELLIGENT ENGINEERING

VOLUME DEDICATED TO IMRE J. RUDAS' SEVENTIETH BIRTHDAY

Springer This book gathers contributions on fuzzy neural control, intelligent and non-linear control, dynamic systems and cyber-physical systems. It presents the latest theoretical and practical results, including numerous applications of computational intelligence in various disciplines such as engineering, medicine, technology and the environment. The book is dedicated to Imre J. Rudas on his seventieth birthday.

MATHEMATICAL METHODS

FOR STUDENTS OF PHYSICS AND RELATED FIELDS

Springer Science & Business Media Intended to follow the usual introductory physics courses, this book contains many original, lucid and relevant examples from the physical sciences, problems at the ends of chapters, and boxes to emphasize important concepts to help guide students through the material.

INFORMATION—CONSCIOUSNESS—REALITY

HOW A NEW UNDERSTANDING OF THE UNIVERSE CAN HELP ANSWER AGE-OLD QUESTIONS OF EXISTENCE

Springer This open access book chronicles the rise of a new scientific paradigm offering novel insights into the age-old enigmas of existence. Over 300 years ago, the human mind discovered the machine code of reality: mathematics. By utilizing abstract thought systems, humans began to decode the workings of the cosmos. From this understanding, the current scientific paradigm emerged, ultimately

discovering the gift of technology. Today, however, our island of knowledge is surrounded by ever longer shores of ignorance. Science appears to have hit a dead end when confronted with the nature of reality and consciousness. In this fascinating and accessible volume, James Glattfelder explores a radical paradigm shift uncovering the ontology of reality. It is found to be information-theoretic and participatory, yielding a computational and programmable universe.

EVIDENCE-BASED PHYSICAL DIAGNOSIS

Saunders Clinical reference that takes an evidence-based approach to the physical examination. Updated to reflect the latest advances in the science of physical examination, and expanded to include many new topics.

LIGHT-MATTER INTERACTION

ATOMS AND MOLECULES IN EXTERNAL FIELDS AND NONLINEAR OPTICS

John Wiley & Sons This book draws together the principal ideas that form the basis of atomic, molecular, and optical science and engineering. It covers the basics of atoms, diatomic molecules, atoms and molecules in static and electromagnetic fields and nonlinear optics. Exercises and bibliographies supplement each chapter, while several appendices present such important background information as physics and math definitions, atomic and molecular data, and tensor algebra. Accessible to advanced undergraduates, graduate students, or researchers who have been trained in one of the conventional curricula of physics, chemistry, or engineering but who need to acquire familiarity with adjacent areas in order to pursue their research goals.

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FORECASTING LARGE MAGNITUDE EARTHQUAKES

PHYSICS AT SURFACES

Cambridge University Press *Physics at Surfaces* is a unique graduate-level introduction to the physics and chemical physics of solid surfaces, and atoms and molecules that interact with solid surfaces. A subject of keen scientific inquiry since the last century, surface physics emerged as an independent discipline only in the late 1960s as a result of the development of ultra-high vacuum technology and high speed digital computers. With these tools, reliable experimental measurements and theoretical calculations could at last be compared. Progress in the last decade has been truly striking. This volume provides a synthesis of the entire field of surface physics from the perspective of a modern condensed matter physicist with a healthy interest in chemical physics. The exposition intertwines experiment and theory whenever possible, although there is little detailed discussion of technique. This much-needed text will be invaluable to graduate students and researchers in condensed matter physics, physical chemistry and materials science working in, or taking graduate courses in, surface science.

ADVANCED ENGINEERING MATHEMATICS WITH MATLAB

Brooks/Cole Publishing Company *ADVANCED ENGINEERING MATHEMATICS WITH MATLAB®* is written for engineers and engineering students who are interested in applying MATLAB® to solve practical engineering problems. The book emphasizes mathematical principles, not computations, with MATLAB® employed as a tool for analysis that shows how engineering problems are defined and solved. The book features complete MATLAB® integration throughout, abundant examples which show real practical applications, and end-of-chapter problems that reinforce techniques.

A GUIDED TOUR OF MATHEMATICAL METHODS FOR THE PHYSICAL SCIENCES

Cambridge University Press This completely revised edition provides a tour of the mathematical knowledge and techniques needed by students across the physical sciences. There are new chapters on probability and statistics and on inverse problems. It serves as a stand-alone text or as a source of exercises and examples to complement other textbooks.

ASTRODYNAMICS

A FIRST COURSE IN DIFFERENTIAL EQUATIONS WITH MODELING APPLICATIONS

Cengage Learning *A FIRST COURSE IN DIFFERENTIAL EQUATIONS WITH MODELING APPLICATIONS*, 10th Edition strikes a balance between the analytical, qualitative, and quantitative approaches to the study of differential equations. This proven and accessible text speaks to beginning engineering and math students through a wealth of pedagogical aids, including an abundance of examples, explanations, Remarks boxes, definitions, and group projects. Written in a straightforward, readable, and

helpful style, this book provides a thorough treatment of boundary-value problems and partial differential equations. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

THE DEVELOPMENT OF HYBRID OPTICAL AND MAGNETIC RESONANCE EXPERIMENTS TO STUDY MOLECULAR STRUCTURE

MATHEMATICAL PHYSICS

S. Chand Publishing [Mathematical Physics](#)

NANO-SIZED MULTIFUNCTIONAL MATERIALS

SYNTHESIS, PROPERTIES AND APPLICATIONS

Elsevier [Nano-sized Multifunctional Materials: Synthesis, Properties and Applications](#) explores how materials can be down-scaled to nanometer-size in order to tailor and control properties. These advanced, low-dimensional materials, ranging from quantum dots and nanoparticles, to ultra-thin films develop multifunctional properties. As well as demonstrating how down-scaling to nano-size can make materials multifunctional, chapters also show how this technology can be applied in electronics, medicine, energy and in the environment. This fresh approach in materials research will provide a valuable resource for materials scientists, materials engineers, chemists, physicists and bioengineers who want to learn more on the special properties of nano-sized materials. Outlines the major synthesis chemical process and problems of advanced nanomaterials Shows how multifunctional nanomaterials can be practically used in biomedical area, nanomedicine, and in the treatment of pollutants Demonstrates how the properties of a variety of materials can be engineered by downscaling them to nano size

ELECTROMAGNETIC WAVE PROPAGATION, RADIATION, AND SCATTERING

FROM FUNDAMENTALS TO APPLICATIONS

John Wiley & Sons [One of the most methodical treatments of electromagnetic wave propagation, radiation, and scattering—including new applications and ideas](#) Presented in two parts, this book takes an analytical approach on the subject and emphasizes new ideas and applications used today. Part one covers fundamentals of electromagnetic wave propagation, radiation, and scattering. It provides ample end-of-chapter problems and offers a 90-page solution manual to help readers check and comprehend their work. The second part of the book explores up-to-date applications of electromagnetic waves—including radiometry, geophysical remote sensing and imaging, and biomedical and signal processing applications. Written by a world renowned authority in the field of electromagnetic research, this new edition of [Electromagnetic Wave Propagation, Radiation, and Scattering: From Fundamentals to Applications](#) presents detailed applications with useful appendices, including mathematical formulas, Airy function, Abel's equation, Hilbert transform, and

Riemann surfaces. The book also features newly revised material that focuses on the following topics: Statistical wave theories—which have been extensively applied to topics such as geophysical remote sensing, bio-electromagnetics, bio-optics, and bio-ultrasound imaging Integration of several distinct yet related disciplines, such as statistical wave theories, communications, signal processing, and time reversal imaging New phenomena of multiple scattering, such as coherent scattering and memory effects Multiphysics applications that combine theories for different physical phenomena, such as seismic coda waves, stochastic wave theory, heat diffusion, and temperature rise in biological and other media Metamaterials and solitons in optical fibers, nonlinear phenomena, and porous media Primarily a textbook for graduate courses in electrical engineering, Electromagnetic Wave Propagation, Radiation, and Scattering is also ideal for graduate students in bioengineering, geophysics, ocean engineering, and geophysical remote sensing. The book is also a useful reference for engineers and scientists working in fields such as geophysical remote sensing, bio-medical engineering in optics and ultrasound, and new materials and integration with signal processing.