
2008 Solved Problems In Electromagnetics

Computational Electromagnetics
Phase Optimization Problems
157 Exercises with Solutions
Advanced Computational Electromagnetic Methods
A Problem Solving Approach
Electromagnetic Field Theory
Electromagnetic Field Theory
Problem Book in Quantum Field Theory
Schaum's Outline of Theory and Problems of Electromagnetics
2008+ Solved Problems In Electromagnetics
Electromagnetic Fields (Theory and Problems)
Boundary Element Methods for Electrical Engineers
An Introduction
Partial Differential Equations
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Physics and Chemistry-Based Algorithms
Low-Frequency Electromagnetic Modeling for Electrical and Biological Systems Using MATLAB
Applications in Wave Field Theory
Electromagnetic Modeling and Simulation
Based on A Priori Information on the Analytical Properties of the Solution
2008+ Solved Problems in Electromagnetics
Ultrasonic and Electromagnetic NDE for Structure and Material Characterization
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The Method of Moments in Electromagnetics
Recent Advances and Engineering Applications
Proceedings of the International Radiation Symposium (IRC/IAMAS)
Satellite Signal Propagation, Impairments and Mitigation
Inverse Acoustic and Electromagnetic Scattering Theory
Solved Problems in Classical Electromagnetism
Parallel Solution of Integral Equation-Based EM Problems in the Frequency Domain
Problems in Classical Electromagnetism
Classical Electrodynamics
2000 Solved Problems in Electromagnetics
Electrodynamics
Problems and Solutions on Electromagnetism
Modelling, Simulation and Data Analysis in Acoustical Problems
Electromagnetics for Engineering Students (Part 2)

LEE SANTIAGO

Computational Electromagnetics MDPI

This is the only book available in English language to consider inverse and optimization problems in which phase field distributions are used as optimizing functions. The mathematical technique used relates to nonlinear integral equations, with numerical methods developed and applied to concrete problems. Written by a team of outstanding and renowned experts in the field, this monograph will appeal to all those dealing with the investigation, design, and optimization of electromagnetic and acoustic radiating and transmitting devices and systems, while also being of interest to mathematicians working on the theory of nonlinear integral equations.

Phase Optimization Problems McGraw-Hill Companies

Confusing Textbooks? Missed Lectures? Tough Test Questions? Fortunately for you, there's Schaum's Outlines. More than 40 million students have trusted Schaum's to help them succeed in the classroom and on exams. Schaum's is the key to faster learning and higher grades in every subject. Each Outline presents all the essential course information in an easy-to-follow, topic-by-topic format. You also get hundreds of examples, solved problems, and practice exercises to test your skills. This Schaum's Outline gives you Practice problems with full explanations that reinforce knowledge Coverage of the most up-to-date developments in your course field In-depth review of practices and applications Fully compatible with your classroom text, Schaum's highlights all the important facts you need to know. Use Schaum's to shorten your study time-and get your best test scores! Schaum's Outlines-Problem Solved.

Springer

The Multilevel Fast Multipole Algorithm (MLFMA) for Solving Large-Scale Computational Electromagnetic Problems provides a detailed and instructional overview of implementing MLFMA. The book: Presents a comprehensive treatment of the MLFMA algorithm, including basic linear algebra concepts, recent developments on the parallel computation, and a number of

application examples Covers solutions of electromagnetic problems involving dielectric objects and perfectly-conducting objects Discusses applications including scattering from airborne targets, scattering from red blood cells, radiation from antennas and arrays, metamaterials etc. Is written by authors who have more than 25 years experience on the development and implementation of MLFMA The book will be useful for post-graduate students, researchers, and academics, studying in the areas of computational electromagnetics, numerical analysis, and computer science, and who would like to implement and develop rigorous simulation environments based on MLFMA.

157 Exercises with Solutions Springer Science & Business Media

A revision of the defining book covering the physics and classical mathematics necessary to understand electromagnetic fields in materials and at surfaces and interfaces. The third edition has been revised to address the changes in emphasis and applications that have occurred in the past twenty years.

Advanced Computational Electromagnetic Methods John Wiley & Sons

Electromagnetic Fields

A Problem Solving Approach CRC Press

This second edition comes from your suggestions for a more lively format, self-learning aids for students, and the need for applications and projects without being distracted from EM Principles. Flexibility Choose the order, depth, and method of reinforcing EM Principles—the PDF files on CD provide Optional Topics, Applications, and Projects. Affordability Not only is this text priced below competing texts, but also the topics on CD (and downloadable to registered users) provide material sufficient for a second term of study with no additional book for students to buy. MATLAB This book takes full advantage of MATLAB's power to motivate and reinforce EM Principles. No other EM books is better integrated with MATLAB. The second edition is even richer and easier to incorporate into course use with the new, self-paced MATLAB tutorials on the CD and available to registered users.

Electromagnetic Field Theory John Wiley & Sons

Electromagnetics for Engineering Students is a textbook in two parts, Part I and II, that cover all topics of electromagnetics

needed for undergraduate students from vector analysis to antenna principles. In both parts of the book, the topics are presented in sufficient details such that the students will follow the analytical development easily. Each chapter is supported by many illustrative examples, solved problems, and the end of chapter problems to explain the principles of the topics and enhance the knowledge of the student. There are a total of 681 problems in the both parts of the book as follows: 162 illustrative examples, 88 solved problems, and 431 end of chapter problems. This part is a continuation of Part I and focuses on the application of Maxwell's equations and the concepts that are covered in Part I to analyze the characteristics of wave propagation in half-space and bounded media including metamaterials. Moreover, a chapter has been devoted to the topic of antennas to provide readers with the fundamental concepts related to antenna engineering. The key features of this part: • In addition to the coverage of classical topics in electromagnetic normally covered in the similar available texts, this part of the book adds some advanced concepts and topics such as: • Application of multi-pole expansion for vector potentials. • More detailed analysis on the topic of waveguides including circular waveguides. • Refraction through metamaterials and the concept of negative refractive index. • Detailed and easy-to follow presentation of mathematical analyses and problems. • An appendix of mathematical formulae and functions.

Electromagnetic Field Theory CRC Press

Satellite Signal Propagation, Impairments and Mitigation covers issues related to satellite link design. The book develops every concept from elementary physics, covering the basics of signal propagation from Maxwell's equations and then gradually developing the physical reasons for impairments. It emphasizes the unique concepts for each involved process, based on their physics, and explains how they form the determining factors for the related suitable engineering technique for mitigation. Every basic principle is followed by mathematical substantiation with an explanation of the physics behind the equations. Covers the basics of signal propagation, starting from Maxwell's equations and then gradually developing the physical reasons for the impairments Includes different important propagation

experiments conducted and detailed in the Appendix Employs the power of MATLAB® as both a visualization and problem-solving tool Provides MATLAB scripts for simulation exercises

Problem Book in Quantum Field Theory John Wiley & Sons
The Method of Moments in Electromagnetics, Third Edition details the numerical solution of electromagnetic integral equations via the Method of Moments (MoM). Previous editions focused on the solution of radiation and scattering problems involving conducting, dielectric, and composite objects. This new edition adds a significant amount of material on new, state-of-the-art compressive techniques. Included are new chapters on the Adaptive Cross Approximation (ACA) and Multi-Level Adaptive Cross Approximation (MLACA), advanced algorithms that permit a direct solution of the MoM linear system via LU decomposition in compressed form. Significant attention is paid to parallel software implementation of these methods on traditional central processing units (CPUs) as well as new, high performance graphics processing units (GPUs). Existing material on the Fast Multipole Method (FMM) and Multi-Level Fast Multipole Algorithm (MLFMA) is also updated, blending in elements of the ACA algorithm to further reduce their memory demands. The Method of Moments in Electromagnetics is intended for students, researchers, and industry experts working in the area of computational electromagnetics (CEM) and the MoM. Providing a bridge between theory and software implementation, the book incorporates significant background material, while presenting practical, nuts-and-bolts implementation details. It first derives a generalized set of surface integral equations used to treat electromagnetic radiation and scattering problems, for objects comprising conducting and dielectric regions. Subsequent chapters apply these integral equations for progressively more difficult problems such as thin wires, bodies of revolution, and two- and three-dimensional bodies. Radiation and scattering problems of many different types are considered, with numerical results compared against analytical theory as well as measurements.

Schaum's Outline of Theory and Problems of Electromagnetics Springer

Emerging Topics in Computational Electromagnetics in Computational Electromagnetics presents advances in Computational Electromagnetics. This book is designed to fill the

existing gap in current CEM literature that only cover the conventional numerical techniques for solving traditional EM problems. The book examines new algorithms, and applications of these algorithms for solving problems of current interest that are not readily amenable to efficient treatment by using the existing techniques. The authors discuss solution techniques for problems arising in nanotechnology, bioEM, metamaterials, as well as multiscale problems. They present techniques that utilize recent advances in computer technology, such as parallel architectures, and the increasing need to solve large and complex problems in a time efficient manner by using highly scalable algorithms.

2008+ Solved Problems In Electromagnetics CRC Press

This book provides students with a thorough theoretical understanding of electromagnetic field equations and it also treats a large number of applications. The text is a comprehensive two-semester textbook. The work treats most topics in two steps – a short, introductory chapter followed by a second chapter with in-depth extensive treatment; between 10 to 30 applications per topic; examples and exercises throughout the book; experiments, problems and summaries. The new edition includes: modifications to about 30-40% of the end of chapter problems; a new introduction to electromagnetics based on behavior of charges; a new section on units; MATLAB tools for solution of problems and demonstration of subjects; most chapters include a summary. The book is an undergraduate textbook at the Junior level, intended for required classes in electromagnetics. It is written in simple terms with all details of derivations included and all steps in solutions listed. It requires little beyond basic calculus and can be used for self-study. The wealth of examples and alternative explanations makes it very approachable by students. More than 400 examples and exercises, exercising every topic in the book Includes 600 end-of-chapter problems, many of them applications or simplified applications Discusses the finite element, finite difference and method of moments in a dedicated chapter

Electromagnetic Fields (Theory and Problems) Springer
2008+ Solved Problems in Electromagnetics SciTech Publishing
Boundary Element Methods for Electrical Engineers SciTech Publishing

Mathematical Modeling in Diffraction Theory: Based on A Priori Information on the Analytical Properties of the Solution provides

the fundamental physical concepts behind the theory of wave diffraction and scattered wave fields as well as its application in radio physics, acoustics, optics, radio astronomy, biophysics, geophysics, and astrophysics. This book provides a coherent discussion of several advanced topics that have the potential to push forward progress in this field. It begins with examples illustrating the importance of taking a priori information into account when developing algorithms for solving diffraction problems, with subsequent chapters discussing the basic analytical representations of wave fields, the auxiliary current and source methods for solving the problems of diffraction at compact scatterers, the null field and matrix methods that are widely used to solve problems in radio-physics, radio-astronomy, and biophysics, and the continued boundary condition and pattern equation method. Provides ideas and techniques for obtaining a priori information on analytical properties of wave fields and provides methods for solving diffraction problems Includes numerous concrete examples of localization of singularities of analytical continuation of wave fields Presents a qualitative explanation of the formation of visions of objects Formulates the concept of “invisible objects Supplies appropriate computer programs for all presented methods

An Introduction Wit Pr/Computational Mechanics

Modelling and simulation in acoustics is currently gaining importance. In fact, with the development and improvement of innovative computational techniques and with the growing need for predictive models, an impressive boost has been observed in several research and application areas, such as noise control, indoor acoustics, and industrial applications. This led us to the proposal of a special issue about “Modelling, Simulation and Data Analysis in Acoustical Problems”, as we believe in the importance of these topics in modern acoustics’ studies. In total, 81 papers were submitted and 33 of them were published, with an acceptance rate of 37.5%. According to the number of papers submitted, it can be affirmed that this is a trending topic in the scientific and academic community and this special issue will try to provide a future reference for the research that will be developed in coming years.

Partial Differential Equations McGraw-Hill Education

A step-by-step guide to parallelizing cem codes The future of computational electromagnetics is changing drastically as the

new generation of computer chips evolves from single-core to multi-core. The burden now falls on software programmers to revamp existing codes and add new functionality to enable computational codes to run efficiently on this new generation of multi-core CPUs. In this book, you'll learn everything you need to know to deal with multi-core advances in chip design by employing highly efficient parallel electromagnetic code. Focusing only on the Method of Moments (MoM), the book covers: In-Core and Out-of-Core LU Factorization for Solving a Matrix Equation A Parallel MoM Code Using RWG Basis Functions and ScaLAPACK-Based In-Core and Out-of-Core Solvers A Parallel MoM Code Using Higher-Order Basis Functions and ScaLAPACK-Based In-Core and Out-of-Core Solvers Turning the Performance of a Parallel Integral Equation Solver Refinement of the Solution Using the Conjugate Gradient Method A Parallel MoM Code Using Higher-Order Basis Functions and Plapack-Based In-Core and Out-of-Core Solvers Applications of the Parallel Frequency Domain Integral Equation Solver Appendices are provided with detailed information on the various computer platforms used for computation; a demo shows you how to compile ScaLAPACK and PLAPACK on the Windows® operating system; and a demo parallel source code is available to solve the 2D electromagnetic scattering problems. Parallel Solution of Integral Equation-Based EM Problems in the Frequency Domain is indispensable reading for computational code designers, computational electromagnetics researchers, graduate students, and anyone working with CEM software. *Engineering and Biomedical Applications* Artech House Achieve optimal microwave system performance by mastering the principles and methods underlying today's powerful computational tools and commercial software in electromagnetics. This authoritative resource offers you clear and complete explanation of this essential electromagnetics knowledge, providing you with the analytical background you need to understand such key approaches as MoM (method of moments), FDTD (Finite Difference Time Domain) and FEM (Finite

Element Method), and Green's functions. This comprehensive book includes all math necessary to master the material. Moreover, it features numerous solved problems that help ensure your understanding of key concepts throughout the book. Physics and Chemistry-Based Algorithms John Wiley & Sons Balanis' second edition of *Advanced Engineering Electromagnetics* – a global best-seller for over 20 years – covers the advanced knowledge engineers involved in electromagnetic need to know, particularly as the topic relates to the fast-moving, continually evolving, and rapidly expanding field of wireless communications. The immense interest in wireless communications and the expected increase in wireless communications systems projects (antenna, microwave and wireless communication) points to an increase in the number of engineers needed to specialize in this field. In addition, the Instructor Book Companion Site contains a rich collection of multimedia resources for use with this text. Resources include: Ready-made lecture notes in Power Point format for all the chapters. Forty-nine MATLAB® programs to compute, plot and animate some of the wave phenomena Nearly 600 end-of-chapter problems, that's an average of 40 problems per chapter (200 new problems; 50% more than in the first edition) A thoroughly updated Solutions Manual 2500 slides for Instructors are included. *Low-Frequency Electromagnetic Modeling for Electrical and Biological Systems Using MATLAB* Courier Dover Publications Nature-Inspired Computing: Physics and Chemistry-Based Algorithms provides a comprehensive introduction to the methodologies and algorithms in nature-inspired computing, with an emphasis on applications to real-life engineering problems. The research interest for Nature-inspired Computing has grown considerably exploring different phenomena observed in nature and basic principles of physics, chemistry, and biology. The discipline has reached a mature stage and the field has been well-established. This endeavour is another attempt at investigation into various computational schemes inspired from nature, which are presented in this book with the development of a suitable

framework and industrial applications. Designed for senior undergraduates, postgraduates, research students, and professionals, the book is written at a comprehensible level for students who have some basic knowledge of calculus and differential equations, and some exposure to optimization theory. Due to the focus on search and optimization, the book is also appropriate for electrical, control, civil, industrial and manufacturing engineering, business, and economics students, as well as those in computer and information sciences. With the mathematical and programming references and applications in each chapter, the book is self-contained, and can also serve as a reference for researchers and scientists in the fields of system science, natural computing, and optimization. Applications in Wave Field Theory Springer Science & Business Media This new resource covers the latest developments in computational electromagnetic methods, with emphasis on cutting-edge applications. This book is designed to extend existing literature to the latest development in computational electromagnetic methods, which are of interest to readers in both academic and industrial areas. The topics include advanced techniques in MoM, FEM and FDTD, spectral domain method, GPU and Phi hardware acceleration, metamaterials, frequency and time domain integral equations, and statistics methods in bio-electromagnetics. Electromagnetic Modeling and Simulation John Wiley & Sons This extremely valuable learning resource is for students of electromagnetics and those who wish to refresh and solidify their understanding of its challenging applications. Problem-solving drills help develop confidence, but few textbooks offer the answers, never mind the complete solutions to their chapter exercises. In this text, noted author Professor Syed Nasar has divided the book's problems into topic areas similar to a textbook and presented a wide array of problems, followed immediately by their solutions.