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The Method of Moments in Electromagnetics John Wiley & Sons

Advanced Electromagnetic Computation with MATLAB® discusses commercial electromagnetic software, widely used in the industry. Algorithms of Finite Differences, Moment method, Finite Element method and Finite Difference Time Domain method are illustrated. Hand-computed simple examples and MATLAB-coded examples are used to explain the concepts behind the algorithms. Case studies of practical examples from transmission lines, waveguides, and electrostatic problems are given so students are able to develop the code and solve the problems. Two new chapters including advanced methods based on perturbation techniques and three dimensional finite element examples from radiation scattering are included.

Space Antenna Handbook John Wiley & Sons

Pozar's new edition of Microwave Engineering includes more material on active circuits, noise, nonlinear effects, and wireless systems. Chapters on noise and nonlinear distortion, and active devices have been added along with the coverage of noise and more material on intermodulation distortion and related nonlinear effects. On active devices, there's more updated material on bipolar junction and field effect transistors. New and updated material on wireless communications systems, including link budget, link margin, digital modulation methods, and bit error rates is also part of the new edition. Other new material includes a section on transients on transmission lines, the theory of power waves, a discussion of higher order modes and frequency effects for microstrip line, and a discussion of how to determine unloaded.

Advanced Engineering Electromagnetics Wiley-IEEE Press

If you're looking for a clear, comprehensive overview of basic electromagnetics principles and applications to antenna and microwave circuit design for communications, this authoritative book is your best choice. Including concise explanations of all required mathematical concepts needed to fully comprehend the material, the book is your complete resource for understanding electromagnetics in current, emerging and future broadband communication systems, as well as high-speed analogue and digital electronic circuits and systems. **Numerical Analysis for Electromagnetic Integral Equations** John Wiley & Sons

The discipline of antenna theory has experienced vast technological changes. In response, Constantine Balanis has updated his classic text, *Antenna Theory*, offering the most recent look at all the necessary topics. New material includes smart antennas and fractal antennas, along with the latest applications in wireless communications. Multimedia material on an accompanying CD presents PowerPoint viewgraphs of lecture notes, interactive review questions, Java animations and applets, and MATLAB features. Like the previous editions, *Antenna Theory*, Third Edition meets the needs of electrical engineering and physics students at the senior undergraduate and beginning graduate levels, and those of practicing engineers as well. It is a benchmark text for mastering the latest theory in the subject, and for better understanding the technological applications. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Electromagnetic Waves, Materials, and Computation with MATLAB BoD - Books on Demand

An advanced treatment of the main concepts of radar. Systematic and organized, it nicely balances readability with mathematical rigor. Many techniques and examples have been chosen from the radar industry (Rayleigh fluctuating targets are used as they yield simple expressions for the probability of detection), and others for their pedagogical value (Costas signals lead the coded radar signals because their ambiguity function can be intuitively deduced). Ordered statistics is covered in more depth than other CFAR techniques because its performance can be obtained analytically without resorting to simulation methods. Contains many exercises. An

Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Power Integrity for Electrical and Computer Engineers CRC Press

This book details the development of techniques and ideas from the radial basis function. It begins with a mathematical description of the basic concept of radial function method with chapters progressively delving into the derivation and construction of radial basis functions for large-scale wave propagation problems including singularity problems, high-frequency wave problems and large-scale computation problems. This reference, written by experts in numerical analysis, demonstrates how the functions arise naturally in mathematical analyses of structures responding to external loads. Readers are also equipped with mathematical knowledge about the radial basis function for understanding key algorithms required for practical solutions. Key features: - Introduces basic concepts of radial basis function methods - Provides detailed derivations of several radial basis functions - Explains complex problems using simple language - Contains a wide range of numerical examples to demonstrate applications of relevant functions - Combines the radial basis function with other known numerical methods (boundary element methods and differential equations). - Includes references and appropriate chapter appendices - Includes MATLAB codes for origin intensity factors and nearly singular factors for radial basis calculations The book is designed to make information about radial basis function methods more accessible to research scientists, professional engineers and postgraduate students, with a specific focus on large-scale wave propagation problems.

Analysis and Design National Academies Press

This book addresses a broad range of topics on antennas for space applications. First, it introduces the fundamental methodologies of space antenna design, modelling and analysis as well as the state-of-the-art and anticipated future technological developments. Each of the topics discussed are specialized and contextualized to the space sector. Furthermore, case studies are also provided to demonstrate the design and implementation of antennas in actual applications. Second, the authors present a detailed review of antenna designs for some popular applications such as satellite communications, space-borne synthetic aperture radar (SAR), Global Navigation Satellite Systems (GNSS) receivers, science instruments, radio astronomy, small satellites, and deep-space applications. Finally it presents the reader with a comprehensive path from space antenna development basics to specific individual applications. Key Features: Presents a detailed review of antenna designs for applications such as satellite communications, space-borne SAR, GNSS receivers, science instruments, small satellites, radio astronomy, deep-space applications Addresses the space antenna development from different angles, including electromagnetic, thermal and mechanical design strategies required for space qualification Includes numerous case studies to demonstrate how to design and implement antennas in practical scenarios Offers both an introduction for students in the field and an in-depth reference for antenna engineers who develop space antennas This book serves as an excellent reference for researchers, professionals and graduate students in the fields of antennas and propagation, electromagnetics, RF/microwave/millimetre wave systems, satellite communications, radars, satellite remote sensing, satellite navigation and spacecraft system engineering, It also aids

engineers technical managers and professionals working on antenna and RF designs. Marketing and business people in satellites, wireless, and electronics area who want to acquire a basic understanding of the technology will also find this book of interest.

Springer

The most up-to-date, comprehensive treatment of classical and modern antennas and their related technologies *Modern Antenna Handbook* represents the most current and complete thinking in the field of antennas. The handbook is edited by one of the most recognizable, prominent, and prolific authors, educators, and researchers on antennas and electromagnetics. Each chapter is authored by one or more leading international experts and includes cover-age of current and future antenna-related technology. The information is of a practical nature and is intended to be useful for researchers as well as practicing engineers. From the fundamental parameters of antennas to antennas for mobile wireless communications and medical applications, *Modern Antenna Handbook* covers everything professional engineers, consultants, researchers, and students need to know about the recent developments and the future direction of this fast-paced field. In addition to antenna topics, the handbook also covers modern technologies such as metamaterials, microelectromechanical systems (MEMS), frequency selective surfaces (FSS), and radar cross sections (RCS) and their applications to antennas, while five chapters are devoted to advanced numerical/computational methods targeted primarily for the analysis and design of antennas.

Theory and Computation of Electromagnetic Fields Cambridge University Press

Presents fundamental principles of lasers immediately relevant to lasers in practice. Balancing theory with engineering examples from well-established laser companies, the book provides an important and practical design resource. Using actual laser systems from major companies as examples, the book provides an opportunity to apply skills. The book also introduces non-linear optics and covers important support technologies. It also incorporates material on basic laser safety and summarizes basic optics commonly used in laser engineering. A valuable reference book for practicing electrical engineers working with lasers. **Solutions and Applications of Scattering, Propagation, Radiation and Emission of Electromagnetic Waves** John Wiley & Sons **Fundamentals of Materials Science and Engineering** takes an integrated approach to the sequence of topics - one specific structure, characteristic, or property type is covered in turn for all three basic material types: metals, ceramics, and polymeric materials. This presentation permits the early introduction of non-metals and supports the engineer's role in choosing materials based upon their characteristics. Using clear, concise terminology that is familiar to students, *Fundamentals* presents material at an appropriate level for both student comprehension and instructors who may not have a materials background.

Analysis and Design John Wiley & Sons

Presenting topics that have not previously been contained in a single volume, this book offers an up-to-date review of computational methods in electromagnetism, with a focus on recent results in the numerical simulation of real-life electromagnetic problems and on theoretical results that are useful in devising and analyzing approximation algorithms. Based on four courses delivered in Cetraro in June 2014, the material covered includes the spatial discretization of Maxwell's equations in a bounded domain, the numerical approximation of the eddy current

model in harmonic regime, the time domain integral equation method (with an emphasis on the electric-field integral equation) and an overview of qualitative methods for inverse electromagnetic scattering problems. Assuming some knowledge of the variational formulation of PDEs and of finite element/boundary element methods, the book is suitable for PhD students and researchers interested in numerical approximation of partial differential equations and scientific computing.

Handbook of Engineering Electromagnetics Springer Science & Business Media

This book presents case studies to illustrate that careful modeling of the assembly characteristics and layout details is required to bring simulations and measurements into agreement. Engineers learn how to use a proper combination of isolation structures and circuit techniques to make analog/RF circuits more immune to substrate noise. Topics include substrate noise propagation, passive isolation structures, noise couple in active devices, measuring the coupling mechanisms in analog/RF circuits, prediction of the impact of substrate noise on analog/RF circuits, and noise coupling in analog/RF systems.

Computational Electromagnetism Cambridge University Press

Describes most popular computational methods used to solve problems in electromagnetics Matlab code is included throughout, so that the reader can implement the various techniques discussed Exercises included

Large-Scale Structures in Acoustics and Electromagnetics IOS Press

This book focuses on computational methods to determine the dynamics of large-scale electromagnetic, acoustic, and mechanical systems, including those with many substructures and characterized by an extended range of scales. Examples include large naval and maritime vessels, aerospace vehicles, and densely packed microelectronic and optical integrated circuits (VLSI). The interplay of time and frequency-domain computational and experimental procedures was addressed, emphasizing their relationship and synergy, and indicating mathematics research opportunities.

Fundamentals of Materials Science and Engineering: An Integrated Approach, 5th Edition CRC Press

This book is an electromagnetics classic. Originally published in 1941, it has been used by many generations of students, teachers, and researchers ever since. Since it is classic electromagnetics, every chapter continues to be referenced to this day. This classic reissue contains the entire, original edition first published in 1941. Additionally, two new forewords by Dr. Paul E. Gray (former MIT President and colleague of Dr. Stratton) and another by Dr. Donald G. Dudley, Editor of the IEEE Press Series on E/M Waves on the significance of the book's contribution to the field of Electromagnetics.

Electromagnetic Fields and Waves in Fractional Dimensional Space Artech House

Engineers do not have the time to wade through rigorously theoretical books when trying to solve a problem. Beginners lack the expertise required to understand highly specialized treatments of individual topics. This is especially problematic for a field as broad as electromagnetics, which propagates into many diverse engineering fields. The time h

Radar Principles CRC Press

A professional guide to the fundamentals of power integrity analysis with an emphasis on silicon level power integrity Power Integrity for Electrical and Computer Engineers embraces the most recent changes in the field, offers a comprehensive introduction to the discipline of power integrity, and provides an overview of the fundamental principles. Written by noted experts on the topic, the book goes beyond most other resources to focus on the detailed aspects of silicon and optimization techniques in order to broaden the field of study. This important book offers coverage of a wide range of topics including signal analysis, EM concepts for PI, frequency domain analysis for PI, numerical methods (overview) for PI, and silicon device PI modeling. Power Integrity for Electrical and Computer Engineers examine platform technologies, system considerations, power conversion, system level modeling, and optimization methodologies. To reinforce the material presented, the authors include example problems. This important book: • Includes coverage on convergence, accuracy, and error analysis and explains how these can be used to analyze power integrity problems • Contains information for modeling the power converter from the PDN to the load in a full system level model • Explores areas of device level modeling of silicon as related to power integrity • Contains example word problems that are related to an individual

chapter's subject Written for electrical and computer engineers and academics, Power Integrity for Electrical and Computer Engineers is an authoritative guide to the fundamentals of power integrity and explores the topics of power integrity analysis, power integrity analytics, silicon level power integrity, and optimization techniques.

Electromagnetics and Antenna Technology BoD - Books on Demand

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.

Engineering Electromagnetics CRC Press

Reviews the fundamental concepts behind the theory and computation of electromagnetic fields The book is divided in two parts. The first part covers both fundamental theories (such as vector analysis, Maxwell's equations, boundary condition, and transmission line theory) and advanced topics (such as wave transformation, addition theorems, and fields in layered media) in order to benefit students at all levels. The second part of the book covers the major computational methods for numerical analysis of electromagnetic fields for engineering applications. These methods include the three fundamental approaches for numerical analysis of electromagnetic fields: the finite difference method (the finite difference time-domain method in particular), the finite element method, and the integral equation-based moment method. The second part also examines fast algorithms for solving integral equations and hybrid techniques that combine different numerical methods to seek more efficient solutions of complicated electromagnetic problems.

Theory and Computation of Electromagnetic Fields, Second Edition: Provides the foundation necessary for graduate students to learn and understand more advanced topics Discusses electromagnetic analysis in rectangular, cylindrical and spherical coordinates Covers computational electromagnetics in both frequency and time domains Includes new and updated homework problems and examples Theory and Computation of Electromagnetic Fields, Second Edition is written for advanced undergraduate and graduate level electrical engineering students. This book can also be used as a reference for professional engineers interested in learning about analysis and computation skills.

Analysis and Design Wiley

Time-Harmonic Electromagnetic Fields A Classic Reissue in the IEEE Press Series on Electromagnetic Wave Theory Donald G. Dudley, Series Editor "When I begin a new research project, I clear my desk and put away all texts and reference books. Invariably, Harrington's book is the first book to find its way back to my desk. My copy is so worn that it is falling apart."--Dr. Kendall F. Casey, SRI "In the opinion of our faculty,

there is no other book available that serves as well as Professor Harrington's does as an introduction to advanced electromagnetic theory and to classic solution methods in electromagnetics."--Professor Chalmers M. Butler, Clemson University First published in 1961, Roger Harrington's Time-Harmonic Electromagnetic Fields is one of the most significant works in electromagnetic theory and applications. Over the past forty years, it proved to be a key resource for students, professors, researchers, and engineers who require a comprehensive, in-depth treatment of the subject. Now, IEEE is reissuing the classic in response to requests from our many members, who found it an invaluable textbook and an enduring reference for practicing engineers. About the IEEE Press Series on Electromagnetic Wave Theory The IEEE Press Series on Electromagnetic Wave Theory offers outstanding coverage of the field. It consists of new titles of contemporary interest as well as reissues and revisions of recognized classics by established authors and researchers. The series emphasizes works of long-term archival significance in electromagnetic waves and applications. Designed specifically for graduate students, researchers, and practicing engineers, the series provides affordable volumes that explore and explain electromagnetic waves beyond the undergraduate level.