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SHYANNE LILLY

Antennas Springer Science & Business Media

Offers a comprehensive introduction to the practice and underpinnings of personal communications. This book contains chapters that explain how the ultra-wide band technology affects various aspects of personal communications. It covers important innovations such as wireless local networks, personal networks, and MIMO techniques.

Radiowave Propagation and Antennas for Personal Communications 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.

Antennas and Wave Propagation

Artech House

This completely updated second edition of an Artech House classic provides a thorough introduction to the basic principles of electromagnetic wave propagation of radio frequencies in real-world conditions, fully updated by including new achievements in theory and technology. It serves as an invaluable daily reference for practitioners in the field and as a complete, organized text on the subject. This comprehensive resource covers a wide range of essential topics, from the classification of radio waves, electromagnetic wave theory, and antennas for RF radio links, to the impact of the earth surface on the propagation of ground waves, atmospheric effects in radio wave propagation, and radio wave reception. The book explores the propagation of the ground radio waves, namely the waves that propagate in vicinity of the earth's surface (e.g., guided by that interface), without involvement of any atmospheric effects. Specifics of the high-frequency (HF) radio propagation due to reflections from ionospheric layers is studied, based on commonly used models of the ionospheric vertical profiles. Scattering of the radio waves of UHF and higher frequency bands from the random variations of the tropospheric refraction index (from tiny air turbulences) are also considered by using the principles of statistical radio-physics. Analysis of propagation conditions on real propagation paths, including analysis of

the power budget of the VHF/UHF link to assure its stability (percentage of availability within observation time frame), terrestrial, broadcast, mobile, and satellite RF links are presented. The engineering design of the cellular networks, including LTE 4G, 5G and upcoming higher generations is explored. HF propagation predictions for extremely long-range links design for commercial and military applications are explained. Packed with examples and problems, this book provides a theoretical background for astrophysical, aeronomy and geophysical instrumentation design.

Design of Ultra Wideband Antenna Matching Networks Springer

The book provides a comprehensive coverage of the fundamental topics in microwave engineering, antennas and wave propagation, and electromagnetic compatibility, including electromagnetic boundary value problems, waveguide theory, microwave resonators, antennas and wave propagation, microwave circuits, principles of electromagnetic compatibility designs, information theory and systems. Deals systematically with fundamental problems in radio frequency engineering, this important volume provides an updated treatment of radio frequency theory and techniques. The book can be used as a one-semester course for senior and first-year graduate students or as a reference for radio frequency engineers and applied physicists. Contents: Solutions of Electromagnetic Field Problems Waveguides Microwave Resonators Microwave Circuits Antennas Propagation of Radio Waves Electromagnetic Compatibility Information Theory and Systems Readership: Academics, researchers, postgraduates and

undergraduates in electrical & electronic engineering and applied physics.

Keywords: Microwave Engineering; Antenna; Wave Propagation; Electromagnetic Compatibility

An Introduction to Radio Frequency Engineering PHI Learning Pvt. Ltd.

Practical, concise and complete reference for the basics of modern antenna design Antennas: from Theory to Practice discusses the basics of modern antenna design and theory. Developed specifically for engineers and designers who work with radio communications, radar and RF engineering, this book offers practical and hands-on treatment of antenna theory and techniques, and provides its readers the skills to analyse, design and measure various antennas. Key features: Provides thorough coverage on the basics of transmission lines, radio waves and propagation, and antenna analysis and design Discusses industrial standard design software tools, and antenna measurement equipment, facilities and techniques Covers electrically small antennas, mobile antennas, UWB antennas and new materials for antennas Also discusses reconfigurable antennas, RFID antennas, Wide-band and multi-band antennas, radar antennas, and MIMO antennas Design examples of various antennas are provided Written in a practical and concise manner by authors who are experts in antenna design, with experience from both academia and industry This book will be an invaluable resource for engineers and designers working in RF engineering, radar and radio communications, seeking a comprehensive and practical introduction to the basics of antenna design. The book can also be used as a

textbook for advanced students entering a profession in this field.

The Electronics of Radio McGraw-Hill College

Originally published in 2004, this book provides a detailed introduction to radio frequency (RF) engineering, using a straightforward and easily understood approach combined with numerous worked examples, illustrations and homework problems. The author focuses on minimising the mathematics needed to grasp the subject while providing a solid theoretical foundation for the student. Emphasis is also placed on the practical aspects of radio engineering. The book provides a broad coverage of RF systems, circuit design, antennas, propagation and digital techniques. It will provide an excellent introduction to the subject for graduate students, researchers and practising engineers.

Solutions Manual to Accompany Antennas and Radiowave Propagation John Wiley & Sons

This book addresses propagation phenomena in satellite, radar, broadcasting, short range, trans-horizon and several recent modes of communications in radio links. Also, it includes some topics on antennas, radio noises and improvement techniques. The book provides the necessary basic matters, as well as experimental results and calculation procedures for radio link design.

An Introduction to Electromagnetic Wave Propagation and Antennas

Cambridge University Press

Aimed at a single-semester course on antennas at the undergraduate level, Antennas and Wave Propagation provides a lucid explanation of the fundamentals of antennas and propagation. This student-friendly text also includes simple design procedures

along with a large number of examples and exercises.

Radio Wave Propagation Fundamentals, Second Edition

Artech House

Antennas and Wave Propagation Pearson Education India

Electromagnetic Waves CRC Press
"Electromagnetic Fields in Stratified Media" deals with an important branch of electromagnetic theory, which has many useful applications in subsurface communication, radar, and geophysical prospecting and diagnostics. The book introduces to the electromagnetic theory and wave propagation in complex media, while presenting detailed models for various media: 3, 4, N-layered media, boundary conditions, and anisotropic media. In particular, the complete solutions for a trapped surface wave and lateral wave in a three- or four-layered region, the complete solutions for low frequency wave propagation over a spherical surface coated with a dielectric layer, and the transient field of a horizontal dipole in the boundary layer of two different media are presented. The book is designed for the scientists and engineers engaged in antennas and propagation, EM theory and applications. Dr. Kai Li is Professor at Zhejiang University.

From Theory to Practice BoD – Books on Demand

This fascinating book provides a stimulating introduction to analog electronics by analysing the design and construction of a radio transceiver. Essential theoretical background is given along with carefully designed laboratory and homework exercises. The author begins with a thorough description of basic electronic components and simple circuits and goes on to describe the key elements of radio electronics, including

filters, amplifiers, oscillators, mixers, and antennas. Laboratory exercises lead the reader through the design, construction, and testing of a popular radio transceiver (the NorCal 40A). A diskette containing the widely known circuit simulation software, Puff, is included in the book. This was the first book to deal with elementary electronics in the context of radio. It can be used as a textbook for introductory analog electronics courses, for more advanced undergraduate classes on radio-frequency electronics, and will also be of great interest to electronics hobbyists and radio enthusiasts.

Electromagnetics Engineering Handbook John Wiley & Sons

Understanding electromagnetic wave theory is pivotal in the design of antennas, microwave circuits, radars, and imaging systems. Researchers behind technology advances in these and other areas need to understand both the classical theory of electromagnetics as well as modern and emerging techniques of solving Maxwell's equations. To this end, the book provides a graduate-level treatment of selected analytical and computational methods. The analytical methods include the separation of variables, perturbation theory, Green's functions, geometrical optics, the geometrical theory of diffraction, physical optics, and the physical theory of diffraction. The numerical techniques include mode matching, the method of moments, and the finite element method. The analytical methods provide physical insights that are valuable in the design process and the invention of new devices. The numerical methods are more capable of treating general and complex structures. Together, they form a basis for modern electromagnetic

design. The level of presentation allows the reader to immediately begin applying the methods to some problems of moderate complexity. It also provides explanations of the underlying theories so that their capabilities and limitations can be understood.

Antennas and Wave Propagation John Wiley & Sons

An accessible student-oriented approach to radiowave propagation Propagation—the process whereby a signal is conveyed between transmitter and receiver—has a profound influence on communication systems design. Radiowave Propagation provides an overview of the physical mechanisms that govern electromagnetic wave propagation in the Earth's troposphere and ionosphere. Developed in conjunction with a graduate-level wave propagation course at The Ohio State University, this text offers a balance of physical and empirical models to provide basic physical insight as well as practical methods for system design. Beginning with discussions of propagation media properties, plane waves, and antenna and system concepts, successive chapters consider the most important wave propagation mechanisms for frequencies ranging from LF up to the millimeter wave range, including: Direct line-of-sight propagation through the atmosphere Rain attenuation The basic theory of reflection and refraction at material interfaces and in the Earth's atmosphere Reflection, refraction, and diffraction analysis in microwave link design for a specified terrain profile Empirical path loss models for point-to-point ground links Statistical fading models Standard techniques for prediction of ground wave propagation Ionospheric propagation, with emphasis on the skywave mechanism at MF and

HF and on ionospheric perturbations for Earth-space links at VHF and higher frequencies A survey of other propagation mechanisms, including tropospheric scatter, meteor scatter, and propagation effects on GPS systems Radiowave Propagation incorporates fundamental materials to help senior undergraduate and graduate engineering students review and strengthen electromagnetic physics skills as well as the most current empirical methods recommended by the International Telecommunication Union. This book can also serve as a valuable teaching and reference text for engineers working with wireless communication, radar, or remote sensing systems.

The Electrical Engineering Handbook, Second Edition John Wiley & Sons

An important resource that examines the physical aspects of wireless communications based on mathematical and physical evidence The Physics and Mathematics of Electromagnetic Wave Propagation in Cellular Wireless Communication describes the electromagnetic principles for designing a cellular wireless system and includes the subtle electromagnetic principles that are often overlooked in designing such a system. This important text explores both the physics and mathematical concepts used in deploying antennas for transmission and reception of electromagnetic signals and examines how to select the proper methodology from a wide range of scenarios. In this much-needed guide, the authors—noted experts in the field—explore the principle of electromagnetics as developed through the Maxwellian principles and describe the properties of an antenna in the

frequency domain. The text also includes a review of the characterization of propagation path loss in a cellular wireless environment and examines ultrawideband antennas and the mechanisms of broadband transmission of both power and information. This important resource: Includes a discussion of the shortcomings of a MIMO system from both theoretical and practical aspects Demonstrates how to deploy base station antennas with better efficiency Validates the principle and the theoretical analysis of electromagnetic propagation in cellular wireless communication Contains results of experiments that are solidly grounded in mathematics and physics Written for engineers, researchers, and educators who are or plan to work in the field, The Physics and Mathematics of Electromagnetic Wave Propagation in Cellular Wireless Communication offers an essential resource for understanding the principles underpinning wireless communications.

From Fundamentals to Applications
Springer Science & Business Media
Stutzman's 3rd edition of *Antenna Theory and Design* provides a more pedagogical approach with a greater emphasis on computational methods. New features include additional modern material to make the text more exciting and relevant to practicing engineers; new chapters on systems, low-profile elements and base station antennas; organizational changes to improve understanding; more details to selected important topics such as microstrip antennas and arrays; and expanded measurements topic.

ANTENNAS AND WAVE PROPAGATION

World Scientific

This text provides discussion of the modelling, testing and application of

monopole antennas in free space and in proximity to flat earth, including topics on propagation, tuning stability, antenna range design, noise, ground-based high-frequency arrays, and electrically small antennas.

Electromagnetics for Engineering Students (Part 2) WIT Press

Provides a comprehensive discussion of planar transmission lines and their applications, focusing on physical understanding, analytical approach, and circuit models Planar transmission lines form the core of the modern high-frequency communication, computer, and other related technology. This advanced text gives a complete overview of the technology and acts as a comprehensive tool for radio frequency (RF) engineers that reflects a linear discussion of the subject from fundamentals to more complex arguments. Introduction to Modern Planar Transmission Lines: Physical, Analytical, and Circuit Models Approach begins with a discussion of waves on transmission lines and waves in material medium, including a large number of illustrative examples from published results. After explaining the electrical properties of dielectric media, the book moves on to the details of various transmission lines including waveguide, microstrip line, co-planar waveguide, strip line, slot line, and coupled transmission lines. A number of special and advanced topics are discussed in later chapters, such as fabrication of planar transmission lines, static variational methods for planar transmission lines, multilayer planar transmission lines, spectral domain analysis, resonators, periodic lines and surfaces, and metamaterial realization and circuit models. Emphasizes modeling using physical concepts,

circuit-models, closed-form expressions, and full derivation of a large number of expressions Explains advanced mathematical treatment, such as the variation method, conformal mapping method, and SDA Connects each section of the text with forward and backward cross-referencing to aid in personalized self-study Introduction to Modern Planar Transmission Lines is an ideal book for senior undergraduate and graduate students of the subject. It will also appeal to new researchers with the interdisciplinary background, as well as to engineers and professionals in industries utilizing RF/microwave technologies. *WAVE PROPAGATION AND ANTENNA ENGINEERING* Pearson Education India Ground-penetrating radar (GPR) is a rapidly developing field that has seen tremendous progress over the past 15 years. The development of GPR spans aspects of geophysical science, technology, and a wide range of scientific and engineering applications. It is the breadth of applications that has made GPR such a valuable tool in the geophysical consulting and geotechnical engineering industries, has lead to its rapid development, and inspired new areas of research in academia. The topic of GPR has gone from not even being mentioned in geophysical texts ten years ago to being the focus of hundreds of research papers and special issues of journals dedicated to the topic. The explosion of primary literature devoted to GPR technology, theory and applications, has lead to a strong demand for an up-to-date synthesis and overview of this rapidly developing field. Because there are specifics in the utilization of GPR for different applications, a review of the current state of development of the applications along with the fundamental theory is

required. This book will provide sufficient detail to allow both practitioners and newcomers to the area of GPR to use it as a handbook and primary research reference. *Review of GPR theory and applications by leaders in the field *Up-to-date information and references *Effective handbook and primary research reference for both experienced practitioners and newcomers *Antenna Theory* Cambridge University Press

About The Book: The book covers the major topics of microwave engineering. Its presentation defines the accepted standard for both advanced undergraduate and graduate level courses on microwave engineering. It is an essential reference book for the practicing microwave engineer

Electromagnetic Fields in Stratified Media John Wiley & Sons

This resource provides a comprehensive treatment of the methods, analysis, and practice of impulse and ultrawideband (UWB) systems. Sources, antennas, propagation, electromagnetic theory, and actual practical systems are explored. This book provides novel perspective on impulse and short-pulse wireless engineering along with practical guidance on how to build antennas and radio hardware for high-power impulse signals. Theoretical and experimental results in the time-frequency domain are presented. The book explains and discusses the scattering of UWB electromagnetic pulses by conducting and dielectric objects. Impulse responses of objects and propagation channels are explored with details of signal models and their spectral characteristics and uses of regularization of a Kramers-Kronig type relation for estimating transfer functions. Readers gain insight into the development of high-power

sources of UWB radiation with megavolt effective potential on the base of combined antenna arrays excited with bipolar voltage pulses. This in-depth volume includes chapters on receiving

antennas, transmitting antennas, and antenna arrays along with details on high-power UWB radiation sources as well as problem sets.