

Antenna Theory And Design Stutzman 3rd Edition

Microstrip patch antennas have become the favorite of antenna designers because of their versatility and having the advantages of planar profile, ease of fabrication, compatibility with integrated circuit technology, and conformability with a shaped surface. There is a need for graduate students and practicing engineers to gain an in depth understanding of this subject. The first edition of this book, published in 2011, was written with this purpose in mind. This second edition contains approximately one third new materials. The authors, Prof KF Lee, Prof KM Luk and Dr HW Lai, have all made significant contributions in the field. Prof Lee and Prof Luk are IEEE Fellows. Prof Lee was the recipient of the 2009 John Kraus Antenna Award of the IEEE Antennas and Propagation Society while Prof. Luk receives the same award in 2017, both in recognition of their contributions to wideband microstrip antennas.

Printed antennas have become an integral part of next-generation wireless communications and have been found to be commonly used to improve system capacity, data rate, reliability, etc. This book covers theory, design techniques, and the chronological regression of the printed antennas for various applications. This book will provide readers with the basic conceptual knowledge about antennas along with advanced techniques for antenna design. It covers a variety of analytical techniques and their CAD applications and discusses new applications of printed antenna technology such as sensing. The authors also present special reconfigurable antennas such as ME dipole, polarization, feeding, and DGS. The book will be useful to students as an introduction to design and applications of antennas. Additionally, experienced researchers in this field will find this book a ready reference and benefit from the techniques of research in printed antennas included in this book. Following are some of the salient features of this book: Covers a variety of analytical techniques and their CAD applications Discusses new applications of printed antenna technology such as sensing Examines the state of design techniques of printed antenna Presents special reconfigurable antennas such as ME dipole, polarization, feeding, and DGS

The challenge of communication in planetary exploration has been unusual. The guidance and control of spacecraft depend on reliable communication. Scientific data returned to earth are irreplaceable, or replaceable only at the cost of another mission. In deep space, communications propagation is good, relative to terrestrial communications, and there is an opportunity to press toward the mathematical limit of microwave communication. Yet the limits must be approached warily, with reliability as well as channel capacity in mind. Further, the effects of small changes in the earth's atmosphere and the interplanetary plasma have small but important effects on propagation time and hence on the measurement of distance. Advances are almost incredible. Communication capability measured in 18 bits per second at a given range

rose by a factor of 10 in the 19 years from Explorer I of 1958 to Voyager of 1977. This improvement was attained through ingenious design based on the sort of penetrating analysis set forth in this book by engineers who took part in a highly detailed and amazingly successful program. Careful observation and analysis have told us much about limitations on the accurate measurement of distance. It is not easy to get busy people to tell others clearly and in detail how they have solved important problems. Joseph H. Yuen and the other contributors to this book are to be commended for the time and care they have devoted to explicating one vital aspect of a great adventure of mankind.

A guide to broadband microstrip antennas, offering information to help you choose and design the optimum broadband microstrip antenna configurations for your applications, without sacrificing other antenna parameters. The text shows you how to take advantage of the light-weight, low volume benefits of these antennas, by providing explanations of the various configurations and simple design equations that help you analyze and design microstrip antennas with speed and confidence. This practical resource presents an understanding of the radiation mechanism and characteristics of microstrip antennas, and provides guidance on designing new types of planar monopole antennas with multi-octave bandwidth. The authors explore how to select and design proper broadband microstrip antenna configurations for compact, tunable, dual-band and circular polarization applications. Moreover, the work compares all the broadband techniques and suggests the most attractive configuration.

"This thoroughly revised edition of the Artech House classic, Phased Array Antenna Handbook, offers the most up-to-date and broadest view of array antennas and systems. Supported with over 350 equations and more than 270 illustrations, the book offers complete design details that allow practitioners to size an array system with speed and confidence."--BOOK JACKET. Title Summary field provided by Blackwell North America, Inc. All Rights Reserved

The leading text and reference on radar cross section (RCS) theory and applications, this work presents a comparison of two radar signal strengths. One is the strength of the radar beam sweeping over a target, the other is the strength of the reflected echo sensed by the receiver. This book shows how the RCS "gauge" can be predicted for theoretical objects.

Why yet another book on antennas? The aim of the authors was to offer a didactic text appropriate for advanced graduate students, as well as a practical work for practicing engineers; to combine a solid theoretical treatment with a practical development which should allow the serious reader to undertake antenna design from first principles. To accomplish these goals, the authors bring together their contributions from both industry and the academic environment. The developments of the various topics start at a level which is accessible to a novice in the speciality, but give a treatment which culminates at an advanced level. Another important feature of the book is its use of practical examples illustrating real engineering problems and designs. In most cases, the explanation is sufficient to grasp the principles of

operation of the related equipment, and, where appropriate, the reader is referred to a relevant bibliography for more complete and hence more sophisticated methodologies of design. Of particular note are the chapters on specialist subjects such as antennas and signal theory, and signal processing antennas, showing how the antenna may be combined with signal processing techniques in imaging applications, in angular superresolution, and in adaptive arrays to suppress interference and jamming. Another example is the chapter on the use of polarimetry to enhance the wealth of information which may be extracted, for example, from radar signals.

"Monopole Antennas" provides an industry standard for the modeling, testing, and application of airborne and ground-based monopole antennas. This book, with more than double the content of the author's previous, sold-out book, "Monopole Elements on Circular Ground Planes", includes structures in proximity to flat Earth in addition to those in free

Written by a leading expert in the field, this practical new resource presents the fundamentals of electromagnetics and antenna technology. This book covers the design, electromagnetic simulation, fabrication, and measurements for various types of antennas, including impedance matching techniques and beamforming for ultrawideband dipoles, monopoles, loops, vector sensors for direction finding, HF curtain arrays, 3D printed nonplanar patch antenna arrays, waveguides for portable radar, reflector antennas, and other antennas. It explores the essentials of phased array antennas and includes detailed derivations of important field equations, and a detailed formulation of the method of moments. This resource exhibits essential derivations of equations, providing readers with a strong foundation of the underpinnings of electromagnetics and antennas. It includes a complete chapter on the details of antenna and electromagnetic test and measurement. This book explores details on 3D printed non-planar circular patch array antenna technology and the design and analysis of a planar array-fed axisymmetric gregorian reflector. The lumped-element impedance matched antennas are examined and include a look at an analytic impedance matching solution with a parallel LC network. This book provides key insight into many aspects of antenna technology that have broad applications in radar and communications.

Printed antennas, also known as microstrip antennas, have a variety of beneficial properties including mechanical durability, conformability, compactness and cheap manufacturing costs. As such, they have a range of applications in both the military and commercial sectors, and are often mounted on the exterior of aircraft and spacecraft as well as incorporated into mobile radio communication devices. Printed Antennas for Wireless Communications offers a practical guide to state-of-the-art printed antenna technology used for wireless systems. Contributions from renowned global experts within both academia and industry enable the reader to design printed antennas and associated technologies, and offer valuable insights into important breakthroughs in these areas. Divided into 3 sections covering fundamental wideband printed radiating elements for wireless systems, small printed antennas for wireless systems, and advanced concepts and applications in wireless systems. Provides experimental data and applies theoretical models to present design performance trends and to give the reader an in-depth coverage of the area. Presents summaries of different approaches used in solving wireless systems such as WPAN (wireless personal area network) and MIMO (multi-input/ multi-output), offering the reader an overall perspective of the pros and cons of each. Focuses on practical design, examples and 'real world' solutions. Printed Antennas for Wireless Communications offers an excellent insight on printed antennas from the theoretical to the practical; hence it will appeal to practicing design engineers within commercial and governmental/ military organisations, as well as postgraduate students and researchers in communications technology

If you are involved in designing and developing small antennas, this complete cutting-edge guide covers everything you need to know. From fundamentals and basic theory to design optimization, evaluation, measurements and simulation techniques, all the essential information is included. You will also get many practical examples from a range of wireless systems, whilst a glossary is provided to bring you up to speed on the latest terminology. A wide variety of small antennas is covered, and design and practice steps are described for each type: electrically small, functionally small, physically constrained small and physically small. Whether you are a professional in industry, a researcher, or a graduate student, this is your essential guide to small antennas.

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.

Antenna Theory and Design 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.

This book gives a complete overview of the scientific and engineering aspects of radio and radar pertaining to studies of the Earth environment. The book opens with an analysis of wire antennas, antenna arrays, and aperture antennas suitable for radar applications. Following a treatment of sources of noise, the book moves on to give a detailed presentation of the most important scattering mechanisms exploited by radar. It then provides an overview of basic signal processing strategies, including coherent and incoherent strategies. Pulse compression, especially binary phase coding and frequency chirping, are then analyzed, and the radar range-Doppler ambiguity function is introduced. This is followed

by a comprehensive treatment of radio wave propagation in the atmosphere and ionosphere. The remainder of the book deals with radar applications. The book will be valuable for graduate students and researchers interested in antenna and radar applications across the Earth and environmental sciences and engineering.

Techniques based on the method of modal expansions, the Rayleigh-Stevenson expansion in inverse powers of the wavelength, and also the method of moments solution of integral equations are essentially restricted to the analysis of electromagnetic radiating structures which are small in terms of the wavelength. It therefore becomes necessary to employ approximations based on "high-frequency techniques" for performing an efficient analysis of electromagnetic radiating systems that are large in terms of the wavelength. One of the most versatile and useful high-frequency techniques is the geometrical theory of diffraction (GTD), which was developed around 1951 by J. B. Keller [1,2,3]. A class of diffracted rays are introduced systematically in the GTD via a generalization of the concepts of classical geometrical optics (GO). According to the GTD these diffracted rays exist in addition to the usual incident, reflected, and transmitted rays of GO. The diffracted rays in the GTD originate from certain "localized" regions on the surface of a radiating structure, such as at discontinuities in the geometrical and electrical properties of a surface, and at points of grazing incidence on a smooth convex surface as illustrated in Fig. 1. In particular, the diffracted rays can enter into the GO shadow as well as the lit regions. Consequently, the diffracted rays entirely account for the fields in the shadow region where the GO rays cannot exist.

This comprehensive resource presents antenna fundamentals balanced with the design of printed antennas. Over 70 antenna projects, along with design dimensions, design flows and antenna performance results are discussed, including antennas for wireless communication, 5G antennas and beamforming. Examples of smartphone antennas, MIMO antennas, aerospace and satellite remote sensing array antennas, automotive antennas and radar systems and many more printed antennas for various applications are also included. These projects include design dimensions and parameters that incorporate the various techniques used by industries and academia. This book is intended to serve as a practical microstrip and printed antenna design guide to cover various real-world applications. All Antenna projects discussed in this book are designed, analyzed and simulated using full-wave electromagnetic solvers. Based on several years of the author's research in antenna design and development for RF and microwave applications, this book offers an in-depth coverage of practical printed antenna design methodology for modern applications.

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 coverage 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.

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 propagation are of fundamental importance to the coverage, capacity and quality of all wireless communication systems. This book provides a solid grounding in antennas and propagation, covering terrestrial and satellite radio systems in both mobile and fixed contexts. Building on the highly successful first edition, this fully updated text features significant new material and brand new exercises and supplementary materials to support course tutors. A vital source of information for practising and aspiring wireless communication engineers as well as for students at postgraduate and senior undergraduate levels, this book provides a fundamental grounding in the principles of antennas and propagation without excessive recourse to mathematics. It also equips the reader with practical prediction techniques for the design and analysis of a very wide range of common wireless communication systems. Including: Overview of the fundamental electromagnetic principles underlying propagation and antennas. Basic concepts of antennas and their application to specific wireless systems. Propagation measurement, modelling and prediction for fixed links, macrocells, microcells, picocells and megacells Narrowband and wideband channel modelling and the effect of the channel on communication system performance. Methods that overcome and transform channel impairments to enhance performance using diversity, adaptive antennas and equalisers. Key second edition updates: New chapters on Antennas for Mobile Systems and Channel Measurements for Mobile Radio Systems. Coverage of new technologies, including MIMO antenna systems, Ultra Wideband (UWB) and the OFDM technology used in Wi-Fi and WiMax systems. Many

new propagation models for macrocells, microcells and picocells. Fully revised and expanded end-of-chapter exercises. The Solutions Manual can be requested from http://www.wiley.com/go/saunders_antennas_2e

Frequency Independent Antennas provides a reasonably complete coverage of frequency independent antennas from its inception until the middle of 1965. Most of the contents have not previously been published, except in scattered journal articles, and some are original. The first six chapters are written at a fairly easy level—about the level of a beginning graduate student or the more advanced undergraduate. The last two chapters, which deal with solutions of Maxwell's equations, are at a somewhat higher level. The book opens with a discussion of some fundamental ideas about antennas. It shows how typical measurements can be understood in terms of classical electromagnetic theory: in other words, how to make sense of measured data, how to set up apparatus to get meaningful data, and how to test their significance. Separate chapters follow on the features of frequency independent, plane-sheet, spiral, and log-periodic antennas. Subsequent chapters discuss how the periodic structure theory provides a way of understanding the peculiarities of frequency independent antennas; and solutions of Maxwell's equations for idealized spiral and idealized sinusoidal structures.

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.

A practical book written for engineers who design and use antennas The author has many years of hands on experience designing antennas that were used in such applications as the Venus and Mars missions of NASA The book covers all important

topics of modern antenna design for communications Numerical methods will be included but only as much as are needed for practical applications

This is the first textbook that contains a holistic treatment of antennas both for traditional antennas mounted on masts (Line-of-Sight antenna systems) and for small antennas used on modern wireless devices such as smart phones being subject to signal variations (fading) due to multipath propagation. The focus is on characterization, as well as describing classical antennas by modern complex vector theory - thereby linking together many disciplines such as electromagnetic theory, classical antenna theory, wave propagation, and antenna system performance. Overall, this book represents a rethinking of the way basic antenna theory is presented. The book contains many references to important old and new papers and books on the analysis and design of the most useful antenna types, for the most interested readers.

This completely revised and expanded edition of an Artech House classic Polarization in Electromagnetic Systems presents the principles of polarization as applied to electromagnetic systems. This edition emphasizes the concepts needed for functional aspects of systems calculations and device evaluation. Readers find up-to-date coverage of applications in wireless communications. The fundamentals of polarization are explained, including the principles of wave polarization along with their mathematical representations. This book explores polarized, partially polarized waves, and unpolarized waves. The second part of the book addresses applications of polarization to practical systems. Antenna polarization is covered in detail, including omnidirectional, directional, and broadband antennas with emphasis on antennas for generating linear and circular polarization for each antenna type. This book provides detailed coverage of wave interaction with an antenna and dual-polarized systems. Additional topics covered in this edition include propagation through depolarizing media, polarization in wireless communication systems, including polarization diversity and polarization measurements. This hands-on resource provides a clear exposition on the understanding of polarization principles and evaluation of the performance of electromagnetic systems.

The state of the art in antenna design and engineering Edited by one of the world's foremost authorities on smart antennas and featuring contributions from global experts, *Frontiers in Antennas* discusses the latest advances in antenna design and engineering. This pioneering guide deals primarily with frontier antenna designs and frontier numerical methods. Many of the concepts presented have emerged within the last few years and are still in a rapid state of development. Each chapter provides in-depth details on a unique and modern antenna technology. *Frontiers in Antennas* covers: Ultra-wideband antenna arrays using fractal, polyfractal, and aperiodic geometries Smart antennas using evolutionary signal processing methods The latest developments in Vivaldi antenna arrays Effective media models applied to artificial magnetic conductors and high impedance surfaces Novel developments in metamaterial antennas Biological antenna design methods using genetic algorithms Contact and parasitic methods applied to reconfigurable antennas Antennas in medicine: ingestible capsule antennas using conformal meandered methods Leaky-wave antennas Plasma antennas which can electronically appear and disappear Numerical methods in antenna modeling using time, frequency, and conformal domain decomposition methods

Essential reading for experts in the field of RF circuit design and engineers needing a good reference. This book provides complete design procedures for multiple-pole Butterworth, Chebyshev, and Bessel filters. It also covers capacitors, inductors, and other components with their behavior at RF frequencies discussed in detail. Provides complete design procedures for multiple-pole Butterworth, Chebyshev, and Bessel filters Covers capacitors, inductors, and other components with their behavior at RF frequencies discussed in detail

This book contains papers from the International Workshop on Wearable and Implantable Body Sensor Networks, BSN 2007, held in March 2007 at the University Hospital Aachen, Germany. Topics covered in the volume include new medical measurements, smart bio-sensing textiles, low-power wireless networking, system integration, medical signal processing, multi-sensor data fusion, and on-going standardization activities.

THE DEFINITIVE ANTENNA REFERENCE--FULLY REVISED AND EXPANDED! Design and build your own antennas with the help of this unique guide. Updated and revised to provide clear answers to questions frequently asked by hobbyists and electronics technicians, Practical Antenna Handbook, Fifth Edition blends theoretical concepts with hands-on experience--requiring only high school mathematics Reorganized to flow logically from broad physical principles to specific antenna design and construction techniques, the book begins by covering the fundamentals. Then the half-wave dipole is discussed both as an excellent antenna in its own right and as a conceptual tool for predicting the performance of other designs. Transmission line impedance matching techniques--and a companion Smith chart tutorial--lead into "must have" accessories for tuning, monitoring, and troubleshooting antenna system performance. Other tools, such as antenna modeling software and network analyzer add-ons for PCs and Macs, are addressed, and concluding chapters offer fresh insights into support structures and installation techniques. **NEW TOPICS COVERED INCLUDE:**

Characteristics of all-driven and parasitic arrays Beverages and small MF/HF receiving loops Top-loaded shunt-fed towers and other verticals Theory and design of Yagi beams Effect of real ground on propagation and antenna patterns, impedance, and efficiency Lightning protection and four kinds of ground systems Zoning and restrictive covenants **COVERS A WIDE VARIETY OF ANTENNAS:** Dipoles and inverted-Vs Quads, delta, and NVIS loops Wire arrays (bobtail curtain, half-square, rhombic) Verticals and shunt-fed towers Rotatable Yagi beams MF/HF receiving antennas (flag, pennant, K9AY, Beverage) Mobile and portable antennas VHF/UHF/microwave antennas And many more **GO TO WWW.MHPROFESSIONAL.COM/CARR5 FOR:** * Tables of worldwide geographic coordinates and antenna dimensions vs. frequency * Supplier updates * Author's blog * Additional photographs and schematics * Links to tutorials and specialized calculators

Antennas and Wave Propagation is written for the first course on the same. The book begins with an introduction that

discusses the fundamental concepts, notations, representation and principles that govern the field of antennas. A separate chapter on mathematical preliminaries is discussed followed by chapters on every aspect of antennas from Maxwell's equations to antenna array analysis, antenna array synthesis, antenna measurements and wave propagation. The Latest Resource for the Study of Antenna Theory! In a discipline that has experienced vast technological changes, this text offers the most recent look at all the necessary topics. Highlights include: * New coverage of microstrip antennas provides information essential to a wide variety of practical designs of rectangular and circular patches, including computer programs. * Applications of Fourier transform (spectral) method to antenna radiation. * Updated material on moment methods, radar cross section, mutual impedances, aperture and horn antennas, compact range designs, and antenna measurements. A New Emphasis on Design! Balanis features a tremendous increase in design procedures and equations. This presents a solid solution to the challenge of meeting real-life situations faced by engineers. Computer programs contained in the book-and accompanying software-have been developed to help engineers analyze, design, and visualize the radiation characteristics of antennas.

The gold-standard reference on the design and application of classic and modern antennas—fully updated to reflect the latest advances and technologies This new edition of the “bible of antenna engineering” has been updated to provide start-to-finish coverage of the latest innovations in antenna design and application. You will find in-depth discussion of antennas used in modern communication systems, mobile and personal wireless technologies, satellites, radar deployments, flexible electronics, and other emerging technologies, including 5G, terahertz, and wearable electronics. Antenna Engineering Handbook, Fifth Edition, is bolstered by real-world examples, hundreds of illustrations, and an emphasis on the practical aspects of antennas. Featuring 60 chapters and contributions from more than 80 renowned experts, this acclaimed resource is edited by one of the world’s leading antenna authorities. This edition features all of the classic antenna types, plus new and emerging designs, with 13 all-new chapters and important updates to nearly all chapters from past editions. Antenna Engineering Handbook, Fifth Edition, clearly explains cutting-edge applications in WLANs, automotive systems, PDAs, and handheld devices, making it an indispensable companion for today’s antenna practitioners and developers. Coverage includes: •Antenna basics and classic antennas•Design approaches for antennas and arrays•Wideband and multiband antennas•Antennas for mobile devices and PDAs, automotive applications, and aircraft•Base station and smart antennas•Beamforming and 5G antennas•Millimeter-wave and terahertz antennas•Flexible, wearable, thin film, origami, dielectric, and on-chip antennas•MIMO antennas and phased arrays•Direction-finding and GPS antennas•Active antennas•Low-profile wideband antennas•Nanoantennas•Reflectors and other satellite and radio-telescope antennas•Low-frequency, HF, VHF, UHF, ECM, and ESM antennas•Impedance-

matching techniques and material characteristics•Metastructured and frequency selective surfaces•Propagation and guided structures•Computational techniques and toolsets•Indoor and outdoor measurements

This book focuses on new techniques, analysis, applications and future trends of microstrip and printed antenna technologies, with particular emphasis to recent advances from the last decade Attention is given to fundamental concepts and techniques, their practical applications and the future scope of developments. Several topics, essayed as individual chapters include reconfigurable antenna, ultra-wideband (UWB) antenna, reflectarrays, antennas for RFID systems and also those for body area networks. Also included are antennas using metamaterials and defected ground structures (DGSs). Essential aspects including advanced design, analysis and optimization techniques based on the recent developments have also been addressed. Key Features: Addresses emerging hot topics of research and applications in microstrip and printed antennas Considers the fundamental concepts, techniques, applications and future scope of such technologies Discusses modern applications such as wireless base station to mobile handset, satellite earth station to airborne communication systems, radio frequency identification (RFID) to body area networks, etc. Contributions from highly regarded experts and pioneers from the US, Europe and Asia This book provides a reference for R&D researchers, professors, practicing engineers, and scientists working in these fields. Graduate students studying/working on related subjects will find this book as a comprehensive literature for understanding the present and future trends in microstrip and printed antennas.

Best engineer's reference on antennas. Table of Contents: Introduction to Antennas; Fundamentals of Antennas; Arrays of Discrete Elements; Dipoles and Monopoles; Loop Antennas; Small Antennas; Microstrip Antennas; Slot Antennas; Slot-Antenna Arrays; Leaky-Wave Antennas; Long-Wire Antennas; Surface-Wave Antennas and Surface-Wave Excited Arrays; Helical Antennas; Frequency-Independent Antennas; Horn Antennas; Lens Antennas; Reflector Antennas; Feeds for Lenses and Reflectors; Electromechanical Scanning Antennas; Frequency-Scan Antennas; Phased Arrays; Conformal and Low-Profile Arrays; Adaptive Antennas; Methods of Polarization Synthesis; Low-Frequency Antennas; Medium-Frequency Broadcast Antennas; High-Frequency Antennas; VHF and UHF Communications Antennas; and more. Index. 800 illustrations.

Market_Desc: · Advance courses in Antenna Theory and Design courses for seniors and first year graduate students in Electrical Engineering Special Features: · Provides fundamental methods of analysis that can be used to predict the electromagnetic behavior of nearly everything that radiates· Provides insightful examples of the application of theory to real design problems. It is beautifully and clearly written and is of the highest technical quality· This is the leading text on antenna arrays and the author is the leading researcher in this field. The text frequently refers to the historical

development of antennas, which no other text does About The Book: This text is the classic work in Antenna Theory and Design and is just as relevant to the field today as it was when first published in 1981. It provides an analytic treatment, with supporting experimental evidence, of the major topics of concern to antenna designers. This is a broad-ranging text that covers most of the relevant topics in antenna theory providing fundamental methods of analysis that can be used to predict the electromagnetic behavior of nearly everything that radiates. This stress on the fundamentals is what makes the text valuable twenty-one years after its first publication. It not only presents the theory, but goes on to show very insightful examples of its application to real design problems.

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