Microstrip Patch Antenna By Kai


The book is a collection of best papers presented in the Second International Conference on Microelectronics, Electromagnetics and Telecommunication (ICMEEET 2018), an international colloquium, which aims to bring together academic scientists, researchers and research scholars to discuss the recent developments and future trends in the fields of microelectronics, electromagnetics and telecommunication. Microelectronics research investigates semiconductor materials and device physics for developing electronic devices and integrated circuits with high efficiency, performance in terms of speed, power consumption, and functionality. The book discusses various topics, including analog and digital signal processing, biomedical circuits and systems, RF circuit design, microwave and millimeter wave circuits, green circuits and systems, analog and digital signal processing, nano electronics and gigascale systems, VLSI circuits and systems, SoC and NoC, MEMS and NEMS, VLSI digital signal processing, wireless communications, cognitive radio, and data transmission.

Written by a practicing engineer who is a professor at Apple, Nokia, and Amphenol, Antenna Design for Mobile Devices is a comprehensive guide for fresh and intermediate engineers involved in antenna design. The book instructs readers through all aspects of real-world antennas, design principles, and practical applications. It covers various types of antennas, including printed antennas and their design, making antenna SAR and HAC compliant. Most popular antenna categories, such as internal PIFA, integral IFA, internal folded monopole, ceramic antennas, stubby antennas, and whip stubby antennas, are introduced in this book. The book focuses on the basic principles of each kind of antenna and emphasizes on key parameters of antenna optimization. Complimentary matching software, which accompanies the book, is provided so readers can practice various antenna matching techniques and design matching circuits for antennas. A one-stop reference design center containing all antenna matching techniques described in the book is available. This book is intended for wireless network equipment engineers, who desire a stronger sense of antenna principles, as well as electronic engineering students studying electromagnetics. Readers should possess a basic undergraduate-level understanding of electromagnetic theory. Companion website for the book: http://www.wiley.com/go/zhangantenna

This comprehensive resource presents antenna fundamentals and designs of over 200 printed antennas. This book describes antenna design and analysis methods, as well as their applications, resulting in antennas for wideband communication, 5G antennas, and beamforming. Examples of smartphone antennas, MIMO antennas, aerospace and satellite remote-sensing array antennas, automotive antennas, and radar systems, as well as printed antennas, are presented. This book is intended for professionals in wired and wireless communications, antenna design, and research scholars to discuss the recent developments and future trends in the fields of microelectronics, electromagnetics, and telecommunication. Microelectronics research investigates semiconductor materials and device physics for developing electronic devices and integrated circuits with high efficiency, performance in terms of speed, power consumption, and functionality. The book discusses various topics, including analog and digital signal processing, biomedical circuits and systems, RF circuit design, microwave and millimeter wave circuits, green circuits and systems, analog and digital signal processing, nano electronics and gigascale systems, VLSI circuits and systems, SoC and NoC, MEMS and NEMS, VLSI digital signal processing, wireless communications, cognitive radio, and data transmission.

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 was published in 2011, with this second edition containing approximately one-third new materials. The authors, Prof. LF Lee, Prof. KM Luk and Dr HWL Lai, have 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. Both authors received the same award in 2017, both in recognition of their contributions to wideband microstrip antennas.

This one-of-a-kind new resource presents cognitive radio from an antenna design perspective and introduces the concept of cognitive radio as a protocol that benefits from under-utilized regions of the spectrum. This book covers topics that govern the operation of a cognitive radio and discusses the use of reconfigurable antennas, reconfigurable filters, and MIMO antennas for cognitive radio. The analysis and design of different antenna systems are presented, compared and evaluated. New approaches to improve spectrum efficiency are explored by demonstrating how to design software controlled cognitive radio antenna systems. This book shows how to use software defined radio and demonstrates the benefits of designing appropriate sensing and communicating antennas. The first part of the book introduces the basic concept of cognitive radio and discusses the difference between cognitive radio and the software defined radio from the RF system's perspective. The second part of the book offers an in-depth coverage of practical printed antenna design methodology for modern applications. The rapid growth of the data traffic demands new ways to achieve high-speed wireless links. The book can be used by practicing engineers to design antennas for high-speed wireless links. The book contains a wide range of antenna designs, from simple to complex, and is suitable for both graduate students and practicing engineers. The book is also suitable for wireless network equipment engineers, who desire a stronger sense of antenna principles, as well as electronic engineering students studying electromagnetics. Readers should possess a basic undergraduate-level understanding of electromagnetic theory.
book discusses the main antenna design requirements, procedures and challenges for cognitive radio. The third part of the book introduces new trends in cognitive radio implementation such as the implementation of MIMO antennas on cognitive radio, the use of machine learning techniques to optimize the performance of a cognitive radio environment, and the implementation of cognitive radio and cognitive radio in space.

Today, computer science, engineering and telecommunications are two important areas linked and even inseparable. This is obvious for the user who connects the modem of his computer on his mobile phone or telephone line to access, via the global data network, the information available on the servers. The two domains are evolving rapidly and the development of new architectures of systems dedicated to telecommunications and computing becomes essential. Especially, wireless transmission systems with high data rate. Two parts of these systems should be developed software and hardware. Another area that is renewable energies becomes more attractive for researchers in order to develop new conversion systems with good performances, and a good optimization of energy. For example, in wireless sensor systems, we try to develop new protocols permitting to have a good autonomy in term of energy.

“This anthology combines 15 years of microstrip antenna technology research into one significant volume and includes a special introductory tutorial by the co-editors. Covering theory, design and modeling techniques and methods, this source book is an excellent reference tool for engineers who want to become more familiar with microstrip antennas and microwave systems. Proven antenna designs, novel solutions to practical design problems and relevant papers describing the theory of operation and analysis of microstrip antennas, are contained within this convenient reference.”

“This volume comprises the proceedings of the International Conference on Recent Cognizance in Wireless Communication & Image Processing. It brings together content from academics, researchers, and industry experts in areas of Wireless Communication and Image Processing. The volume provides a snapshot of current progress in computational creativity and a glimpse of future possibilities. The proceedings include two kinds of paper submissions: (i) regular papers addressing foundation issues, describing original research on creative systems development and modeling and (ii) position papers describing work in progress or research directions for computational creativity. This work will be useful to professionals and researchers working in the core areas of wireless communications and image processing.

Exchange of information and innovative ideas are necessary to accelerate the development of technology. With advent of technology, intelligent and soft computing techniques came into existence with a wide scope of implementation in engineering sciences. Keeping this ideology in preference, this book includes the insights that reflect the state-of-the-art in Computer and Computational Sciences from upcoming researchers and leading academicians across the globe. It contains high-quality peer-reviewed papers of several topics, covering variety of topics such as intelligent hardware and software design, advanced communications, power and energy optimization, intelligent techniques used in internet of things, intelligent image processing, advanced software engineering, evolutionary and soft computing security and many more. This book helps the perspective readers in offering a platform for research and industry and academia to derive the advances of higher generation computer and communication technology and shape them into real life applications.

Based on Bahl and Bhatia’s popular 1980 classic, Microstrip Antennas, this all new book provides the detail antenna engineers and designers need to design any type of microstrip antenna. After addressing essential microstrip antenna theory, the authors highlight current design and engineering practices, emphasizing the most pressing issues in this area, including broadbanding, circular polarization, and active microstrip antennas in particular. Special design challenges, ranging from dual polarization, high bandwidth, and surface wave mitigation, to choosing the proper substrate, and shaping an antenna to achieve desired results are all covered.

The increasing demand for wireless communications has revolutionised the lifestyle of today’s society and one of the key components of wireless technology is antenna design. Broadband planar antennas are the newest generation of antennas boasting the attractive features required, such as broad operating bandwidth, low profile, light weight, low cost and ease of integration into arrays or Radio Frequency (RF) circuits, to make them ideal components of modern communications systems. Research into small and broadband antennas has been spurred by the rapid development of portable wireless communication devices such as cell phones, laptops and personal digital assistants. This all-encompassing volume, Broadband Planar Antennas: Design and Applications, systematically describes the techniques for planar antennas from microstrip patch antennas, suspended plate antennas, and planar inverted-L/F antennas to planar dipole antennas. Also discussed are some of the most recent outcomes such as broadband antenna issues in promulgating ultra-wideband applications. Clearly describes the fundamentals of planar antennas and categorises them according to their radiation characteristics. It introduces the advanced progress in broadband planar antennas for modern wireless communications. Includes a wealth of case studies, design guidelines, figures and tables. This text is essential reading for antenna, RF and microwave engineers and manufacturers within the telecommunications industry. Its highly accessible approach will also appeal to researchers, postgraduate students and academic lecturers.

Microstrip patch antennas have become the favorite of antenna designers because of its versatility and advantages of small size, ease of fabrication, compatibility with integrated circuit technology, and conformability with a shaped surface. As there is currently an urgent need for graduate students and practicing engineers to gain an in-depth understanding of this subject, this book was written with this purpose in mind. The authors are IEEE Fellows who have made significant contributions to their fields of expertise. Professor K. F. Lee was the recipient of the 2009 John Kraus Antenna Award of the IEEE Antennas and Propagation Society.

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, treated as individual chapters include reconfigurable antenna, ultra-wideband (UWB) antenna, reflectarray antennas, antennas for RFID systems and also those for body area networks. Also included are antennas using metamaterials and defected ground structures (DGS). Essential aspects including advanced design, analysis and optimization techniques based on the recent developments have also been addressed. Key Features: Emerging hot topics of research and applications in microstrip and printed antennas. Consider the fundamental concepts, techniques, applications and future scope of such technologies. Discusses modern applications such as wirelesstestation to mobile handset, satellite earth station to airborne communication systems, radio frequency identification (RFID) to body area networks, etc. Contributions from highly-reputed engineers 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 and researchers working in related subjects will find this book as a comprehensive perspective for understanding the present and future trends in microstrip and printed antennas.

The Handbook of Antenna Technologies aims to present the rapid development of antenna technologies, particularly in the past two decades, and also showcasing the newly developed technologies and the latest applications. The handbook will provide readers with the comprehensive updated reference information covering theory, modeling and optimization methods, design and measurement, new electromagnetic materials, and applications of antennas. The handbook will widely cover not only all key antenna design issues but also fundamental issues related to antennas (transmission, propagation, feeding structure, materials, fabrication, measurement, system, and unique design challenges in specific applications). This handbook will benefit the readers as a full and quick technical reference with a high-level historic review of technology, detailed technical descriptions and the latest practical applications.
This book presents recent contributions of the Ultra-Wideband Short-Pulse Electromagnetics 7 Conference, including electromagnetic theory, scattering, Ultra-Wideband (UWB) antennas, UWB systems, ground penetrating radar, UWB communications, pulsed-power generation, time-domain computational electromagnetics, UWB compatibility, target detection and discrimination, propagation through dispersive media, and wavelet and multi-resolution techniques.

Driven by the demand for high-data-rate, millimeter wave technologies with broad bandwidth are being explored in high-speed wireless communications. These technologies include gigabit wireless/personal area networks (WPAN), high-speed wireless local area networks (WLAN), and high-speed wireless metropolitan area networks (WMAN). As a result of this technological push, standard organizations are actively calling for specifications of millimeter wave applications in the above wireless systems. Providing the guidance needed to help you navigate through these new technologies, Millimeter Wave Technology in Wireless (PAN, LAN, and MAN covers the fundamental concepts, recent advances, and potential that these millimeter wave technologies will offer with respect to circuits design, system architecture, protocol development, and standardization activities. This book presents essential challenges and solutions related to topics that include millimeter wave monolithic integrated circuit (MMIC), packaging technology of millimeter wave systems and circuits, and millimeter wave channel models. With numerous figures, tables and references, this text allows easy access to the fundamental problems, key challenges, open issues, future directions, and further readings on millimeter wave technologies in relation to WPAN, WLAN, and WMAN.

Compact microstrip antennas are of great importance in meeting the miniaturization requirements of modern portable communications equipment. This book is a comprehensive treatment of design techniques and test data for compact and broadband microstrip designs. It summarizes the work of the author and his graduate students who have published over 30 refereed journal articles on the subject in the past few years. Advanced designs reported by various other prestigious antenna designers are also incorporated as well.

In the last 40 years, the microstrip antenna has been developed for many communication systems such as radars, sensors, wireless, satellite, broadcasting, ultra-wideband, radio frequency identifications (RFIDs), reader devices. The progress in modern wireless communication systems has dramatically increased the demand for microstrip antennas. In this book some recent advances in microstrip antennas are presented.

Up-to-date coverage of the analysis and applications of coplanar waveguides to microstrip circuits and antennas. The unique feature of coplanar waveguides, as opposed to more conventional waveguides, is their uniplanar construction, in which all of the conductors are aligned on the same side of the substrate. This feature simplifies manufacturing and allows for faster and less expensive characterization using on-wafer techniques. Coplanar Waveguide Circuits, Components, and Systems is a complete resource, collecting all of the available information on the subject. Rainer Simon thoroughly discusses design techniques for coplanar waveguide circuits and includes valuable details such as the derivation of the fundamental equations, physical explanations, and numerical examples. Coverage also includes: Discontinuities and circuit elements Transitions to other transmission media Directional couplers, hybrids, and magic T Microwave electromagnetic systems based switches and phase shifters Tunable/distributed using ferroelectric materials Photonic bandgap structures Printed circuit antennas

A comprehensive introduction to the hardware, parameters, and architectures of RF/microwave integrated circuits. As some of the hottest topics in the past few years, radio frequency (RF) and microwave wireless systemically propel us toward a future in which the transmission of voice, video, and data communications is possible anywhere in the world through simple, handheld devices. This book provides scientists and engineers with clear, thorough explanations of all aspects of RF and microwave wireless systems, including general hardware components, system parameters, and architectures. Renowned author Kai Chang covers both communication and radar/sensor systems and extends the discussion onto other intriguing topics, from global positioning systems (GPS) to smart highways and smart automobiles. With an emphasis on basic operating principles, Dr. Chang reviews waveguides and transmission lines, examines modulation and demodulation and multiple-access techniques, and helps bridge the gap between RF/microwave engineering and communication system design. Ample practical examples of components and system configurations and nearly 300 illustrations and photographs complete this timely and indispensable resource. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

The definitive text on microwave ring circuits--now better than ever! For the past three decades, the ring resonator has been widely used in such applications as measurements, filters, oscillators, mixers, couplers, power dividers, combiners, antennas, and frequency-selective surfaces, to name just a few. The field has continued to expand, with many new analyses, models, and applications recently reported. Microwave Ring Circuits and Related Structures has long been the only text fully dedicated to the design of ring resonators. The second edition has been thoroughly revised to reflect the most current developments in the field. In addition to updating all the original material, the authors have added extensive new material: a universal model for both rectangular and circular ring configurations; Applications of ring structures for all types of planar circuits; A new transmission line analysis; An abundance of new applications in bandpass and bandstop filters, couplers, oscillators, and antennas. While retaining all the features that made the original text so useful to both students and teachers in the field, the second edition also includes a discussion of ring resonators and to apply them to both the old and the new applications, including microwave, optical, coplanar waveguide, and waveguide transmission lines. Based on dissertations and papers published by graduate students, scholars, and research associates at A&M University, Microwave Ring Circuits and Related Structures, Second Edition is sure to be a valuable addition to both engineering classrooms and research libraries in the field.


Lee Antennas 044210 The latest research results and important topics driving the development of microstrip and printed antennas. Keeping abreast of current research topics and results in a field as dynamic as microstrip and printed antennas is a challenge for graduate students, researchers, and engineers alike. Theoretical and experimental advances since 1989 have quickly outstripped existing literature on the subject. This invaluable reference provides the latest information on conventional antenna topics, comprehensive accounts of new research topics, updated research results, and advances in Microstrip and Printed Antennas is a comprehensive, up-to-date presentation of the research that is propelling these antennas into an ever-widening array of applications, including potential uses in radar and communication systems. Featuring contributions by leading researchers and supplemented with extensive illustrations, this book: * Covers recent advances in probe-fed and aperture-coupled microstrip antennas, microstrip arrays, and dual and circularly polarized planar antennas * Examines the development of CAD formulas for the rectangular patch * Explores the potential for multifunction printed antennas, new high-temperature superconducting
materials, active microstrip antennas, and tapered slot printed antennas. Discusses the finite-difference time-domain method of analysis. Examines competing dielectric resonator antenna technology. Includes design data and an extensive bibliography.

Telecommunication Systems and Technologies theme is a component of Encyclopedia of Physical Sciences, Engineering and Technology Resources in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty-one Encyclopedias. Telecommunication systems are emerging as the most important infrastructure asset to enable business, economic opportunities, information distribution, culture dissemination and cross-fertilization, and social relationships. As any crucial infrastructure, its design, exploitation, maintenance, and evolution require multi-faceted know-how and multi-disciplinary vision skills. The theme is structured in four main topics: Fundamentals of Communication and Telecommunication Networks; Telecommunication Technologies; Management of Telecommunication Systems/Services; Cross-Layer Organizational Aspects of Telecommunications, which are then expanded into multiple subtopics, each as a chapter. These two volumes are aimed at the following five major target audiences: University and College students, Educators, Professional practitioners, Research personnel and Policy analysts, managers, and decision makers and NGOs.

The volume contains 94 best selected research papers presented at the Third International Conference on Microelectronics, Electromagnetics and Telecommunications (ICMET 2017). The conference was held during 09-10, September, 2017 at Department of Electronics and Communication Engineering, BVRIT Hyderabad College of Engineering for Women, Hyderabad, Telangana, India. The volume includes original and application-based research papers on microelectronics, electromagnetics, telecommunication, wireless communications, signal/speech/video processing and embedded systems.

Antennas and Wireless, Active Devices and Circuits, Passive Components, Systems, and Emerging Technologies

The book provides insights of International Conference in Communication, Devices and Networking (ICCDN 2017) organized by the Department of Electronics and Communication Engineering, Sikkim Manipal Institute of Technology, Sikkim, India during 3 - 4 June, 2017. The book discuses latest research papers presented by researchers, engineers, academicians and industry professionals. It also assists both novice and experienced scientists and developers, to explore new ideas and establish new cooperation between researchers and exchange ideas, information, techniques and applications in the field of electronic and communication devices and networking.

The book reviews developments in the following fields: circular microstrip antennas, microstrip patch antennas, circular polarization and bandwidth, microstrip dipoles, multilayer and parasitic configurations; wideband flat dipole and short-circuit microstrip patch elements and arrays; numerical analysis; multiport network approach; transmission line model; rectangular microstrip antennas; low-cost printed antennas; printed phased-array antennas; circulary polarised antenna arrays; microstrip antenna feeds; substrate technology; computer-aided design of microstrip and triplate circuits; resonant microstrip antenna elements and arrays for aerospace applications; mobile and satellite systems; conical conformal microstrip tracking antennas; and microstrip field diagnostics.

This is the only book currently available that covers this subject. The authors piece together information from diverse areas which is essential to understand integrated and integrated active antennas. Emphasis is placed on active antennas and power combining applications, consolidating the work from numerous researchers. Early chapters lay the foundation for oscillator, antenna, array and power combining theory. Chapter five discusses important testing parameters and techniques for active antenna measurements and includes definitions for equivalent isotropic radiated power, locking gain and locking bandwidth. The last chapter sheds light on beam steering, a more recent development in active antenna arrays. Contains over 200 illustrations.

This lecture discusses the use of graph models to represent reconfigurable antennas. The rise of antennas that adapt to their environment and change their operation based on the users' request hasn't been met with clear design guidelines. There is a need to propose some rules for the optimization of any reconfigurable antenna design and performance. Since reconfigurable antennas are seen as a collection of self-organizing parts, graph models can be introduced to relate each possible topology to a corresponding electromagnetic performance in terms of achieving a characteristic frequency of operation, impedance, and polarization. These models help designers understand reconfigurable antenna structures and enhance their functionality since they transform antennas from bulky devices into mathematical and software accessible models. The use of graphs facilitates the software control and cognition ability of reconfigurable antennas while optimizing their performance. This lecture also discusses the reduction of redundancy, complexity and reliability of reconfigurable antennas and reconfigurable antenna arrays. The full analysis of these parameters allows a better reconfigurable antenna implementation in wireless and space communication platforms. The use of graph models to reduce the complexity while preserving the reliability of reconfigurable antennas allow a better incorporation in applications such as cognitive radio, MIMO, satellite communications, and personal communication systems. A swifter response time is achieved with less cost and losses. This lecture is written for individuals who wish to venture into the field of reconfigurable antennas, with a little prior experience in this area, and learn how graph rules and theory, mainly used in the field of computer science, networking, and control systems, can be applied to electromagnetic structures. This lecture will walk the reader through a design and analysis process of reconfigurable antennas using graph models with a practical and theoretical outlook.

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