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Wireless Communications Design Handbook Interference Into Circuits Aspects Of Noise Interference And Environmental Concerns

Most of the available literature in wireless networking and mobile computing concentrates on the physical aspect of the subject, such as spectrum management and cell re-use. In most cases, a description of fundamental distributed algorithms that support mobile hosts in a wireless environment is either not included or is only briefly discussed. The rapid advancement of various wireless communication system services has created the need to analyze the possibility of their performance improvement. Introducing the basic principles of digital communications performance analysis and its mathematical formalization, Fading and Interference Mitigation in Wireless Communications will help you stay up to date with recent developments in the performance analysis of space diversity reception over fading channels in the presence of cochannel interference. The book presents a unified method for computing the performance of digital communication systems characterized by a variety of modulation and detection types and channel models. Explaining the necessary concepts of digital communication system design, the book guides you step by step through the basics of performance analysis of digital communication receivers. Supplying you with the tools to perform an accurate performance evaluation of the proposed communication scenarios, the book includes coverage of multichannel reception in various fading environments, influence of cochannel interference, and macrodiversity reception when channels are simultaneously affected by various types of

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fading and shadowing. It also includes many numerical illustrations of applications that correspond to practical systems. The book presents a large collection of system performance curves to help researchers and system designers perform their own tradeoff studies. The presented collection of system performances will help you perform trade-off studies among the various communication type/drawback combinations in order to determine the optimal choice considering the available constraints. The concepts covered in this book can be useful across a range of applications, including wireless, satellite, terrestrial, and maritime communications.

Written with the expert in mind the book describes the physical layer of UMTS (Universal Mobile Telecommunication System). In a clear fashion it compiles the main technical features of the physical layer standard together with a description of the basic digital communications and spread spectrum technology. In addition the test cases specified in the standard are described together with their implications on any practical front-end design. The reader will benefit from the standard description which frees him from studying lots of standardization documents. Additional explanations of the standard and especially the test cases will help to better understand the effects on any front-end system design. Many references are provided for readers interested in in-depth treatments of certain topics.

Multiple-input multiple-output (MIMO) technology constitutes a breakthrough in the design of wireless communications systems, and is already at the core of several wireless standards. Exploiting multipath scattering, MIMO techniques deliver significant performance enhancements in terms of data transmission rate and interference reduction. This book is a detailed introduction to the analysis and design of MIMO wireless systems. Beginning with an overview of MIMO

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technology, the authors then examine the fundamental capacity limits of MIMO systems. Transmitter design, including precoding and space-time coding, is then treated in depth, and the book closes with two chapters devoted to receiver design. Written by a team of leading experts, the book blends theoretical analysis with physical insights, and highlights a range of key design challenges. It can be used as a textbook for advanced courses on wireless communications, and will also appeal to researchers and practitioners working on MIMO wireless systems.

"This book brings together advanced research on diverse topics in wireless communications and networking, including the latest developments in broadband technologies, mobile communications, wireless sensor networks, network security, and cognitive radio networks"--

Anyone who has ever shopped for a new smart phone, laptop, or other tech gadget knows that staying connected is crucial. There is a lot of discussion over which service provider offers the best coverage—enabling devices to work anywhere and at any time—with 4G and LTE becoming a pervasive part of our everyday language. The Handbook of Research on Next Generation Mobile Communication Systems offers solutions for optimal connection of mobile devices. From satellite signals to cloud technologies, this handbook focuses on the ways communication is being revolutionized, providing a crucial reference source for consumers, researchers, and business professionals who want to be on the frontline of the next big development in wireless technologies. This publication features a wide variety of research-based articles that discuss the future of topics such as bandwidth, energy-efficient power, device-to-device communication, network security and privacy, predictions for 5G communication systems, spectrum sharing and connectivity, and many other relevant issues that will

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influence our everyday use of technology.

Wireless Communications: Theory and Techniques covers fundamental concepts of wireless communications including extensive discussion of cellular system design principles, interference and signal processing related topics. The author identifies the complexities of providing reliable wireless communications in the presence of several signal impairing parameters of the channel. The first part of the book concentrates on mobile radio channels and the impairments these induce in signals propagating over them. These impairments include signal attenuation, fading - selective or flat, slow or fast, and interference. The second part addresses signal reception and processing for minimizing the impact of channel impairments. The third part brings into perspective cellular system design and covers cellular systems that are in commercial operation. The five 3G interface standards are described. Practical treatment of certain essential wireless topics such as antennas, electromagnetic waves and propagation is provided. The material is extensively illustrated and provides comprehensive lists of reference after each chapter. Numerous solved examples and problems to help the reader are included. Problems are provided at the end of chapters for homework and review. This book is for graduate level courses on wireless communications but it can also be adapted for the senior undergraduate level course by omitting material involving the more difficult mathematical manipulations. Professionals will find a wealth of practical insight gained from the author's years of experience in the field.

In recent years, a wealth of research has emerged addressing various aspects of mobile communications signal processing. New applications and services are continually arising, and future

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mobile communications offer new opportunities and exciting challenges for signal processing. The Signal Processing for Mobile Communications Handbook provides

This book provides holistic yet concise information on what modern cognitive radio networks are, how they work, and the possible future directions for them. The authors first present the most generic models of modern cognitive radio networks while taking their different architectural designs and classifications into consideration. While the spectrum resource is shown to be the most important resource for the cognitive radio networks, the book exposes the importance of the other resources that are needed to help drive the technology. The book then discusses in-depth the key tools (such as optimization and queuing theory) and techniques (such as cooperative diversity and relaying) that are being employed to formulate resource problems, investigate solutions, and interpret such solutions for useful and practical modern cognitive radio networks realization. Further, the book studies the impact of modern cognitive radio networks on other emerging technologies such as 5G, Internet of Things, and advanced wireless sensor networks and discusses the role that cognitive radio networks play in the evolution of smart cities and in the realization of a highly interconnected world. In discussing the future of the cognitive radio networks, the book

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emphasizes the need to advance new or improved tools, techniques, and solutions to address lingering problems in the aspects of resource realization and utilization, network complexity, network security, etc., which can potentially limit the cognitive radio networks in their stride to becoming one of the most promising technologies for the immediate and near future. Presents a concise yet detailed in study, interpretation, and evaluation of modern cognitive radio networks; Includes topics such as stochastic geometry approach and deep learning in cognitive radio networks; Provides direction for further research engagements and makes recommendations for practical cognitive radio network implementation.

Revised and enlarged version that discusses how to design a mobile communications system.

Comprehensively examines the mobile radio environment. Covers prediction of propagation loss, calculation and methods of reducing fades, interference, frequency plans and associated schemes, design parameters, signaling and channel access, cellular CDMA, microcell systems, and miscellaneous related systems. Contains chapter-by-chapter references and problems.

Noise-Driven Phenomena in Hysteretic Systems provides a general approach to nonlinear systems with hysteresis driven by noisy inputs, which leads to a unitary framework for the analysis of various

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stochastic aspects of hysteresis. This book includes integral, differential and algebraic models that are used to describe scalar and vector hysteretic nonlinearities originating from various areas of science and engineering. The universality of the authors approach is also reflected by the diversity of the models used to portray the input noise, from the classical Gaussian white noise to its impulsive forms, often encountered in economics and biological systems, and pink noise, ubiquitous in multi-stable electronic systems. The book is accompanied by HysterSoft© - a robust simulation environment designed to perform complex hysteresis modeling – that can be used by the reader to reproduce many of the results presented in the book as well as to research both disruptive and constructive effects of noise in hysteretic systems.

This book brings together papers from the 2018 International Conference on Communications, Signal Processing, and Systems, which was held in Dalian, China on July 14–16, 2018. Presenting the latest developments and discussing the interactions and links between these multidisciplinary fields, the book spans topics ranging from communications, signal processing and systems. It is aimed at undergraduate and graduate electrical engineering, computer science and mathematics students, researchers and engineers from academia and industry as well as government employees.

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Volume One of the Wireless Communications Design Handbook provides an in-depth look at interference problems in satellite communications. The material presented is from a satellite or spacecraft hardware point of view rather than from theoretical models. Each satellite subsystem is described in detail to point out interference and noise problems associated with it. The book also addresses typical architectures and hardware design issues in satellites. In addition, a detailed look at space interference is discussed with emphasis on the possible impact on satellite electronics. An applications-oriented reference for engineers, system designers, and practitioners Addresses the most common interference concerns in ground mobile wireless communications systems Hardware-oriented approach to interference and noise concerns as well as satellite subsystem design All satellite subsystems described in great technical detail Significantly covers space interference with a slanted approach to satellite hardware effects Covers modern hardware design for low earth orbit satellites to be used in wireless communications Radio Network Planning and Optimisation for UMTS comprehensively explains how to dimension, plan and optimise UMTS (Universal Mobile Telecommunications System) networks. It introduces the properties of the spread spectrum system and provides a general overview of the physical layer of

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UTRA FDD. The radio network planning process for WCDMA is clearly presented and detailed information on how to dimension, plan and rollout a 3G network, both theoretically and practically is provided. This valuable text examines current and future radio network management issues and their impact on network performance as well as the relevant capacity and coverage enhancement methods. * Includes automation examples of radio resource management * Focuses on UTRA FDD and introduces UTRA TDD, GPRS and EDGE and examines their interaction and synergy * Provides an excellent source of information for those considering future cellular networks where Quality of Service (QoS) is of paramount importance * Analyses the radio network planning challenges and opportunities for both greenfield and existing operators * Includes an accompanying CD-ROM featuring a static radio network simulator implemented in MATLAB(r) Authoritative and instructive, this text will have instant appeal to wireless operators and network and terminal manufacturers. It will also be essential reading for university students, frequency regulation bodies and everyone interested in radio network planning and optimisation, especially RF network systems engineering professionals.

Most books in wireless communications address technical subjects which are relevant to ground mobile systems. Volume 2: Terrestrial and Mobile

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Interference of the Wireless Communications Design Handbook addresses a topic frequently overlooked in ground mobile wireless system design: interference problems at the hardware level. This book employs a hardware-oriented approach, which is the most effective approach for addressing interference and noise problems in ground mobile wireless systems. The book is a practical reference for engineers who are particularly interested in practical case studies covering how to avoid undesired interference and noise problems in their designs. It covers some of the most common interference models usually addressed, and it describes material related to transmitter and receiver hardware design and how interference control plays a significant role in equipment performance. Each of the three Wireless Communications Design Handbook volumes addresses theory and immediate applications. Design issues are also considered in detail for the protection of wireless ground systems against interference.

Key Features

- * An applications-oriented reference for engineers, system designers, and practitioners
- * Addresses the most common interference concerns in ground mobile wireless communications systems
- * Provides a hardware-oriented approach for addressing transmitter and receiver interference issues, as well as ground mobile designs
- * Gives extensive detail regarding noise and interference control solutions for grounded

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wireless facilities * Details the space interference effect in ground mobile systems * Discusses hardware issues ranging from digital phones to ground stations.

This monograph is intended for the designers and would-be designers of secure and efficient wireless communication systems under intentional interference. Along with the widespread of wireless devices, especially reconfigurable software defined radios, jamming has become a serious threat to civilian communications. In this book, going beyond traditional communication system design that mainly focuses on accurate information transmission under benign environments, we aim to enhance the physical layer security of communication systems by integrating modern cryptographic techniques into transceiver design, so as to achieve secure high-speed transmission under hostile interference with high reliability and efficiency. We revisit existing jamming patterns, and introduce new jamming patterns. We analyze the weaknesses of existing anti-jamming techniques. We present innovative and feasible anti-jamming techniques, which can strengthen the inherent security of the 3G, 4G and the upcoming 5G systems with minimal and inexpensive changes to the existing CDMA, frequency hopping and OFDM schemes. We also provide benchmarks for system performance evaluation under various jamming scenarios through

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capacity analysis. This book includes design principles, in-depth theoretical analysis and practical design examples, and will be of interest to academic researchers as well as professionals in industry.

This leading-edge resource offers you a new methodology for analyzing and studying the behavior of wireless communication systems in an interference environment. It provides you with modern tools and techniques for use in real-world applications that help you guarantee optimum system performance. The book treats both additive and multiplicative interfering signals, including in-depth descriptions of how these signals behave, regardless of the source.

Many wireless systems could benefit from the ability to transmit and receive on the same frequency at the same time, which is known as In-Band Full-Duplex (IBFD). This technology could lead to enhanced spectral efficiency for future wireless networks, such as fifth-generation New Radio (5G NR) and beyond, and could enable capabilities and applications that were previously considered impossible, such as IBFD with phased array systems. In this exciting new book, experts from industry, academic, and federal research institutions discuss the various approaches that can be taken to suppress the inherent self-interference that is generated in IBFD systems. Both static and adaptive techniques that span across the propagation, analog and digital domains are

presented. Details and measured results that encompass high-isolation antenna designs, RF, and photonic cancellation as well as signal processing approaches, which include beamforming and linear/non-linear equalization are detailed.

Throughout this book, state-of-the-art IBFD systems that utilize these technologies will be provided as practical examples for various applications. Expert IBFD perspectives from multiple research organizations and companies, which would provide readers with the most accurate state-of-the-art approaches. This is the first book that dives into both the techniques that make IBFD systems possible as well as several different applications that use IBFD technology.

With 26 entirely new and 5 extensively revised chapters out of the total of 39, the Mobile Communications Handbook, Third Edition presents an in-depth and up-to-date overview of the full range of wireless and mobile technologies that we rely on every day. This includes, but is not limited to, everything from digital cellular mobile radio and evolving personal communication systems to wireless data and wireless networks. Illustrating the extraordinary evolution of wireless communications and networks in the last 15 years, this book is divided into five sections: Basic Principles provides the essential underpinnings for the wide-ranging mobile communication technologies currently in use

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throughout the world. Wireless Standards contains technical details of the standards we use every day, as well as insights into their development. Source Compression and Quality Assessment covers the compression techniques used to represent voice and video for transmission over mobile communications systems as well as how the delivered voice and video quality are assessed. Wireless Networks examines the wide range of current and developing wireless networks and wireless methodologies. Emerging Applications explores newly developed areas of vehicular communications and 60 GHz wireless communications. Written by experts from industry and academia, this book provides a succinct overview of each topic, quickly bringing the reader up to date, but with sufficient detail and references to enable deeper investigations. Providing much more than a "just the facts" presentation, contributors use their experience in the field to provide insights into how each topic has emerged and to point toward forthcoming developments in mobile communications.

Most books in wireless communications address technical subjects which are relevant to ground mobile systems. Volume 2: Terrestrial and Mobile Interference of the Wireless Communications Design Handbook addresses a topic frequently overlooked in ground mobile wireless system design: interference problems at the hardware level. This

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RF/Wireless Design! Short-range wireless—communications over distances of less than 100 meters—is the most rapidly growing segment of RF/wireless engineering. Alan Bensky is an internationally recognized expert in short-range wireless, and this new edition of his bestselling book is completely revised to cover the latest developments in this fast moving field. You'll find coverage of such cutting-edge topics as:

- architectural trends in RF/wireless integrated circuits
- compatibility and conflict issues between different short-range wireless systems
- “Zigbee and related new IEEE standards for short-range communications
- latest U.S. and international regulatory standards for spread spectrum, ultra wideband, and other advanced communications techniques

Alan Bensky also thoroughly discusses the fundamentals of radio signal propagation, communications protocols and modulation methods, information theory, antennas and transmission lines, receivers, transmitters, radio system design, and how to successfully implement a short-range wireless system. All material has been carefully updated and revised to make it as technically up-to-the-minute as possible. You'll also find coverage of Bluetooth, “Wi-Fi and related 802.11 variants, digital modulation methods, and other essential information for planning and designing short-range wireless hardware and networks. This new edition will, like the first edition,

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be an invaluable reference for engineers and technical professionals who design, support, market, and maintain short-range wireless communications systems. No other book contains EVERYTHING pertaining to short-range wireless design. Covers all the hot topics like 802.11, Zigbee, Wi-Fi and Bluetooth.

This book is for RF Engineers and, in particular, those engineers focusing mostly on RF systems and RFIC design. The author develops systematic methods for RF systems design, complete with a comprehensive set of design formulas. Its focus on mobile station transmitter and receiver system design also applies to transceiver design of other wireless systems such as WLAN. This comprehensive reference work covers a wide range of topics from general principles of communication theory, as it applies to digital radio designs to specific examples on implementing multimode mobile systems.

Interference Cancellation Using Space-Time Processing and Precoding Design introduces original design methods to achieve interference cancellation, low-complexity decoding and full diversity for a series of multi-user systems. In multi-user environments, co-channel interference will diminish the performance of wireless communications systems. In this book, we investigate how to design robust space-time codes and pre-coders to suppress the co-channel interference when multiple antennas are available. This book offers a valuable reference work for graduate students, academic researchers and engineers who are interested in

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interference cancellation in wireless communications.

Rigorous performance analysis and various simulation illustrations are included for each design method. Dr.

Feng Li is a scientific researcher at Cornell University.

Handbook of Defence Electronics and Optronics Anil K.

Maini, Former Director, Laser Science and Technology

Centre, India First complete reference on defence

electronics and optronics Fundamentals, Technologies

and Systems This book provides a complete account of

defence electronics and optronics. The content is broadly

divided into three categories: topics specific to defence

electronics; topics relevant to defence optronics; and

topics that have both electronics and optronics

counterparts. The book covers each of the topics in their

entirety from fundamentals to advanced concepts,

military systems in use and related technologies, thereby

leading the reader logically from the operational basics of

military systems to involved technologies and battlefield

deployment and applications. Key features: • Covers

fundamentals, operational aspects, involved

technologies and application potential of a large cross-

section of military systems. Discusses emerging

technology trends and development and deployment

status of next generation military systems wherever

applicable in each category of military systems. • Amply

illustrated with approximately 1000 diagrams and

photographs and around 30 tables. • Includes salient

features, technologies and deployment aspects of

hundreds of military systems, including: military radios;

ground and surveillance radars; laser range finder and

target designators; night visions devices; EW and EO

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jammers; laser guided munitions; and military communications equipment and satellites. Handbook of Defence Electronics and Optronics is an essential guide for graduate students, R&D scientists, engineers engaged in manufacturing defence equipment and professionals handling the operation and maintenance of these systems in the Armed Forces.

This book offers a technical background to the design and optimization of wireless communication systems, covering optimization algorithms for wireless and 5G communication systems design. The book introduces the design and optimization systems which target capacity, latency, and connection density; including Enhanced Mobile Broadband Communication (eMBB), Ultra-Reliable and Low Latency Communication (URLLC), and Massive Machine Type Communication (mMTC). The book is organized into two distinct parts: Part I, mathematical methods and optimization algorithms for wireless communications are introduced, providing the reader with the required mathematical background. In Part II, 5G communication systems are designed and optimized using the mathematical methods and optimization algorithms.

In recent years, a considerable amount of effort has been devoted, both in industry and academia, to improving maintenance. Time is a critical factor in maintenance, and efforts are placed to monitor, analyze, and visualize machine or asset data in order to anticipate to any possible failure, prevent damage, and save costs. The MANTIS Book aims to highlight the underpinning fundamentals of Condition-Based Maintenance related

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conceptual ideas, an overall idea of preventive maintenance, the economic impact and technical solution. The core content of this book describes the outcome of the Cyber-Physical System based Proactive Collaborative Maintenance project, also known as MANTIS, and funded by EU ECSEL Joint Undertaking under Grant Agreement n° 662189. The ambition has been to support the creation of a maintenance-oriented reference architecture that support the maintenance data lifecycle, to enable the use of novel kinds of maintenance strategies for industrial machinery. The key enabler has been the fine blend of collecting data through Cyber-Physical Systems, and the usage of machine learning techniques and advanced visualization for the enhanced monitoring of the machines. Topics discussed include, in the context of maintenance: Cyber-Physical Systems, Communication Middleware, Machine Learning, Advanced Visualization, Business Models, Future Trends. An important focus of the book is the application of the techniques in real world context, and in fact all the work is driven by the pilots, all of them centered on real machines and factories. This book is suitable for industrial and maintenance managers that want to implement a new strategy for maintenance in their companies. It should give readers a basic idea on the first steps to implementing a maintenance-oriented platform or information system.

This book focuses on the multidisciplinary state-of-the-art of full-duplex wireless communications and applications. Moreover, this book contributes with an overview of the fundamentals of full-duplex communications, and

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introduces the most recent advances in self-interference cancellation from antenna design to digital domain.

Moreover, the reader will discover analytical and empirical models to deal with residual self-interference and to assess its effects in various scenarios and applications. Therefore, this is a highly informative and carefully presented book by the leading scientists in the area, providing a comprehensive overview of full-duplex technology from the perspective of various researchers, and research groups worldwide. This book is designed for researchers and professionals working in wireless communications and engineers willing to understand the challenges and solutions full-duplex communication so to implement a full-duplex system.

Transmission Systems Design for Wireless Applications takes you through the design and deployment of wireless transmission networks. From principles and design, to equipment procurement, project management, testing, and operation, it's a practical, hands-on engineering guide with numerous real-life examples of turn-key operations in the wireless networking industry. This book, written for both technical and non-technical professionals, helps you deal with the costs and difficulties involved in setting up the local access with technologies that are still in the evolutionary stage. Issues involved in the deployment of various transmission technologies, and their impact on the overall wireless network topology are discussed. Strategy and approach to transmission network planning, design and deployment are explored.

"This book is the best source for the most current, relevant,

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cutting edge research in the field of industrial informatics focusing on different methodologies of information

technologies to enhance industrial fabrication, intelligence, and manufacturing processes"--Provided by publisher.

A comprehensive, single-source reference on satellite technology and its applications, *Satellite Technology: Principles and Applications, Second Edition* includes the latest developments on the topic. Covering the features and facilities of satellites and satellite launch vehicles, with an emphasis on the fundamental principles and concepts, the authors provide readers with a complete understanding of the technology. This book explains the past, present and future satellite missions, as well as non-communication related applications. Coverage ranges from remote sensing and navigational uses to meteorological and military areas. This second edition contains an additional chapter on earth station design and gives extensive focus to space based weapon systems, satellite interference and future trends in satellite technology. Extra information has also been provided on all of the first edition's topics to enhance the existing coverage. Fully updated new edition with latest technological developments Covers the full range of important applications such remote sensing, weather forecasting, navigational, scientific and military applications Amply illustrated with figures and photographs, this book also contains problems with solutions, which is of benefit students at undergraduate and graduate levels An indispensable book for professionals and students in the field of satellite technology Companion website provides a complete and updated compendium on satellites and satellite launch vehicles

The move toward worldwide wireless communications continues at a remarkable pace, and the antenna element of the technology is crucial to its success. With contributions from more than 30 international experts, the *Handbook of*

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Antennas in Wireless Communications brings together all of the latest research and results to provide engineering professionals and students with a one-stop reference on the theory, technologies, and applications for indoor, hand-held, mobile, and satellite systems. Beginning with an introduction to wireless communications systems, it offers an in-depth treatment of propagation prediction and fading channels. It then explores antenna technology with discussion of antenna design methods and the various antennas in current use or development for base stations, hand held devices, satellite communications, and shaping beams. The discussions then move to smart antennas and phased array technology, including details on array theory and beamforming techniques. Space diversity, direction-of-arrival estimation, source tracking, and blind source separation methods are addressed, as are the implementation of smart antennas and the results of field trials of systems using smart antennas implemented. Finally, the hot media topic of the safety of mobile phones receives due attention, including details of how the human body interacts with the electromagnetic fields of these devices. Its logical development and extensive range of diagrams, figures, and photographs make this handbook easy to follow and provide a clear understanding of design techniques and the performance of finished products. Its unique, comprehensive coverage written by top experts in their fields promises to make the Handbook of Antennas in Wireless Communications the standard reference for the field. Multiple-input multiple-output (MIMO) technology constitutes a breakthrough in the design of wireless communications systems, and is already at the core of several wireless standards. Exploiting multipath scattering, MIMO techniques deliver significant performance enhancements in terms of data transmission rate and interference reduction. This 2007 book is a detailed introduction to the analysis and design of

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MIMO wireless systems. Beginning with an overview of MIMO technology, the authors then examine the fundamental capacity limits of MIMO systems. Transmitter design, including precoding and space-time coding, is then treated in depth, and the book closes with two chapters devoted to receiver design. Written by a team of leading experts, the book blends theoretical analysis with physical insights, and highlights a range of key design challenges. It can be used as a textbook for advanced courses on wireless communications, and will also appeal to researchers and practitioners working on MIMO wireless systems.

This book summarizes the authors' latest research on narrowband interference and impulsive noise mitigation and cancelation, including (i) mitigating the impacts of NBI on synchronization; (ii) improving time-frequency interleaving performance under NBI and IN; (iii) accurately recovering and eliminating NBI and IN. The complicated, random and intensive narrowband interference and impulsive noise are a serious bottleneck of the next-generation wireless communications and Internet of things. This book also proposes effective and novel frameworks and algorithms, which will significantly improve the capability of mitigating and eliminating NBI and IN in the next-generation broadband communications systems. This book not only presents thorough theoretical models and algorithm design guidelines, but also provides adequate simulation and experimental engineering methods and results. The book is a valuable reference for those engaged in theoretical study, algorithm design and engineering practice in related fields, such as wireless communications, smart lighting, IoT and smart grid communications.

The need for controlling interference and limiting noise problems in wireless communications systems starts at the most fundamental levels of circuit design. When efficient

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approaches for noise control are implemented at the circuit level, it helps significantly to ensure the effective noise control for the overall system design. This book is a practical reference for engineers who are particularly interested in practical case studies covering how to avoid undesired interference and noise problems in their designs. It covers a significant number of chapters dedicated to different aspects of digital, analog, and mixed mode analog/digital design which are directly affected by noise and interference issues. Each of the three Wireless Communications Design Handbook volumes addresses theory and immediate applications. The approach followed is strictly hardware-oriented. The material presented provides a good, practical, and theoretical background of noise sources and their analysis, as well as methodologies for minimizing interference problems in electronic design. An applications-oriented reference for engineers, system designers, and practitioners Includes computational techniques for simulation Addresses the most common interference concerns in wireless communications circuit designs Presents a hardware-oriented approach for addressing analog, digital, and mixed-made interference concerns with a focus on design Addresses noise sources, interference models, and design solutions simultaneously Combines analytical and computer modeling for interference analysis Addresses interference concerns from the IC level to the subsystem level

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