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KEY=INTEGRATED - HERRERA DANIKA

DIGITAL INTEGRATED CIRCUITS

A DESIGN PERSPECTIVE

Pearson designer for new challenges that might be waiting around the corner. Design-oriented perspectives are advocated throughout. Design challenges and guidelines are h... The publisher, Prentice-Hall Engineering/Science/MathematicsProgressive in content and form, this practical text successfully bridges the gap between the circuit perspective and system perspective of digital integrated circuit design. Beginning with solid discussions on the operation of electronic devices and and in-depth analysis of the nucleus of digital design, the text maintains a consistent, logical flow of subject matter throughout, addressing today's most significant and compelling industry topics: the impact of interconnect, design for low power, issues

DIGITAL RADIO SYSTEMS ON A CHIP

A SYSTEMS APPROACH

Springer Science & Business Media This book focuses on a specific engineering problem that is and will continue to be important in the forth-coming information age: namely, the need for highly integrated radio systems that can be embedded in wireless devices for various applications, including portable mobile multimedia wireless communications, wireless appliances, digital cellular, and digital cordless. Traditionally, the design of radio IC's involves a team of engineers trained in a wide range of fields that include networking, communication systems, radio propagation, digital/analog circuits, RF circuits, and process technology. However as radio IC's become more integrated, the need for a diverse skill set and knowledge becomes essential for professionals as well as students to broaden beyond their trained area of expertise and to become proficient in related areas. The key to designing an optimized, economical solution for radio systems on a chip hinges on the designer's thorough understanding of the complex trade-offs from communication systems down to circuits. To acquire the insight and understanding of the complex system and circuit trade-offs, a designer must digest volumes of books covering diverse topics, such as communications theory, radio propagation, and digital/analog/RF circuits. While books are available today that cover the individual areas, they tend to be narrowly focused and do not provide the necessary insight in the specific problem of integrating a complete radio system on a chip.

DIGITAL ELECTRONICS AND DESIGN WITH VHDL

Morgan Kaufmann Digital Electronics and Design with VHDL offers a friendly presentation of the fundamental principles and practices of modern digital design. Unlike any other book in this field, transistor-level implementations are also included, which allow the readers to gain a solid understanding of a circuit's real potential and limitations, and to develop a realistic perspective on the practical design of actual integrated circuits. Coverage includes the largest selection available of digital circuits in all categories (combinational, sequential, logical, or arithmetic); and detailed digital design techniques, with a thorough discussion on state-machine modeling for the analysis and design of complex sequential systems. Key technologies used in modern circuits are also described, including Bipolar, MOS, ROM/RAM, and CPLD/FPGA chips, as well as codes and techniques used in data storage and transmission. Designs are illustrated by means of complete, realistic applications using VHDL, where the complete code, comments, and simulation results are included. This text is ideal for courses in Digital Design, Digital Logic, Digital Electronics, VLSI, and VHDL; and industry practitioners in digital electronics. Comprehensive coverage of fundamental digital concepts and principles, as well as complete, realistic, industry-standard designs Many circuits shown with internal details at the transistor-

level, as in real integrated circuits Actual technologies used in state-of-the-art digital circuits presented in conjunction with fundamental concepts and principles Six chapters dedicated to VHDL-based techniques, with all VHDL-based designs synthesized onto CPLD/FPGA chips

ANALYSIS AND SOLUTIONS FOR SWITCHING NOISE COUPLING IN MIXED-SIGNAL ICS

Springer Science & Business Media Modern microelectronic design is characterized by the integration of full systems on a single die. These systems often include large high performance digital circuitry, high resolution analog parts, high driving I/O, and maybe RF sections. Designers of such systems are constantly faced with the challenge to achieve compatibility in electrical characteristics of every section: some circuitry presents fast transients and large consumption spikes, whereas others require quiet environments to achieve resolutions well beyond millivolts. Coupling between those sections is usually unavoidable, since the entire system shares the same silicon substrate bulk and the same package. Understanding the way coupling is produced, and knowing methods to isolate coupled circuitry, and how to apply every method, is then mandatory knowledge for every IC designer. Analysis and Solutions for Switching Noise Coupling in Mixed-Signal ICs is an in-depth look at coupling through the common silicon substrate, and noise at the power supply lines. It explains the elementary knowledge needed to understand these phenomena and presents a review of previous works and new research results. The aim is to provide an understanding of the reasons for these particular ways of coupling, review and suggest solutions to noise coupling, and provide criteria to apply noise reduction. Analysis and Solutions for Switching Noise Coupling in Mixed-Signal ICs is an ideal book, both as introductory material to noise-coupling problems in mixed-signal ICs, and for more advanced designers facing this problem.

ANALYSIS AND DESIGN OF DIGITAL INTEGRATED CIRCUITS

IN DEEP SUBMICRON TECHNOLOGY

McGraw-Hill Incorporated The third edition of Hodges and Jackson's Analysis and Design of Digital Integrated Circuits has been thoroughly revised and updated by a new co-author, Resve Saleh of the University of British Columbia. The new edition combines the approachability and concise nature of the Hodges and Jackson classic with a complete overhaul to bring the book into the 21st century. The new edition has replaced the emphasis on BiPolar with an emphasis on CMOS. The outdated MOS transistor model used throughout the book will be replaced with the now standard deep submicron model. The material on memory has been expanded and updated. As well the book now includes more on SPICE simulation and new problems that reflect recent technologies. The emphasis of the book is on design, but it does not neglect analysis and has as a goal to provide enough information so that a student can carry out analysis as well as be able to design a circuit. This book provides an excellent and balanced introduction to digital circuit design for both students and professionals.

SOFTWARE ENGINEERING PERSPECTIVES IN INTELLIGENT SYSTEMS

PROCEEDINGS OF 4TH COMPUTATIONAL METHODS IN SYSTEMS AND SOFTWARE 2020, VOL.1

Springer Nature This book constitutes the refereed proceedings of the 4th Computational Methods in Systems and Software 2020 (CoMeSySo 2020) proceedings. Software engineering, computer science and artificial intelligence are crucial topics for the research within an intelligent systems problem domain. The CoMeSySo 2020 conference is breaking the barriers, being held online. CoMeSySo 2020 intends to provide an international forum for the discussion of the latest high-quality research results.

DIGITAL INTEGRATED CIRCUIT DESIGN

FROM VLSI ARCHITECTURES TO CMOS FABRICATION

Cambridge University Press This practical, tool-independent guide to designing digital circuits takes a unique, top-down approach, reflecting the nature of the design process in industry. Starting with architecture design, the book comprehensively explains the why and how of digital circuit design, using the physics designers need to know, and no more.

CURRICULUM HANDBOOK WITH GENERAL INFORMATION CONCERNING ... FOR THE UNITED STATES AIR FORCE ACADEMY

ENGINEERING THE CMOS LIBRARY

ENHANCING DIGITAL DESIGN KITS FOR COMPETITIVE SILICON

John Wiley & Sons Shows readers how to gain the competitive edge in the integrated circuit marketplace This book offers a wholly unique perspective on the digital design kit. It points to hidden value in the safety margins of standard-cell libraries and shows design engineers and managers how to use this knowledge to beat the competition. Engineering the CMOS Library reveals step by step how the generic, foundry-provided standard-cell library is built, and how to extract value from existing std-cells and EDA tools in order to produce tighter-margined, smaller, faster, less power-hungry, and more yield-producing integrated circuits. It explores all aspects of the digital design kit, including the different views of CMOS std-cell libraries along with coverage of IO libraries, memory compilers, and small analog blocks. Readers will learn: How to work with overdesigned std-cell libraries to improve profitability while maintaining safety How functions usually found in std-cell libraries cover the design environment, and how to add any missing functions How to harness the characterization technique used by vendors to add characterization without having to get it from the vendor How to use verification and validation techniques to ensure proper descriptive views and even fix inconsistencies in vendor release views How to correct for possible conflicts arising from multiple versions and different vendor sources in any given integrated circuit design Complete with real-world case studies, examples, and suggestions for further research, Engineering the CMOS Library will help readers become more astute designers.

ESD DESIGN FOR ANALOG CIRCUITS

Springer Science & Business Media This Book and Simulation Software Bundle Project Dear Reader, this book project brings to you a unique study tool for ESD protection solutions used in analog-integrated circuit (IC) design. Quick-start learning is combined with in-depth understanding for the whole spectrum of cro- disciplinary knowledge required to excel in the ESD ?eld. The chapters cover technical material from elementary semiconductor structure and device levels up to complex analog circuit design examples and case studies. The book project provides two different options for learning the material. The printed material can be studied as any regular technical textbook. At the same time, another option adds parallel exercise using the trial version of a complementary commercial simulation tool with prepared simulation examples. Combination of the textbook material with numerical simulation experience presents a unique opportunity to gain a level of expertise that is hard to achieve otherwise. The book is bundled with simpli?ed trial version of commercial mixed- TM mode simulation software from Angstrom Design Automation. The DECIMM (Device Circuit Mixed-Mode) simulator tool and complementary to the book s- ulation examples can be downloaded from www.analogesd.com. The simulation examples prepared by the authors support the speci?c examples discussed across the book chapters. A key idea behind this project is to provide an opportunity to not only study the book material but also gain a much deeper understanding of the subject by direct experience through practical simulation examples.

EMERGING TECHNOLOGIES AND CIRCUITS

Springer Science & Business Media Emerging Technologies and Circuits contains a set of outstanding papers, keynote and tutorials presented during 3 days at the International Conference On Integrated Circuit Design and Technology (ICICDT) held in June 2008 in Minatec, Grenoble.

ROBUST DESIGN OF DIGITAL CIRCUITS ON FOIL

Cambridge University Press A practical guide to the theory and applications of TFT technologies and circuit designs for those in academia and in industry.

WIRELESS COMMUNICATIONS CIRCUITS AND SYSTEMS

IET Wireless and mobile communications is a fast-growing area and has an enormous impact on almost every aspect of our daily lives. This book examines integrated circuits, systems and transceivers for wireless and mobile communications. It covers the most recent developments in key RF, IF, analogue, mixed-signal components and single-chip transceivers in CMOS technology, a preferred technology for system-on-chip design. The book takes a top-down approach from wireless communications systems, mobile terminals/transceivers, to constituent blocks, and systematically covers the whole range of analogue, mixed-signal, baseband, IT and RF circuits.

INTEGRATED CIRCUIT AND SYSTEM DESIGN. POWER AND TIMING MODELING, OPTIMIZATION, AND SIMULATION

20TH INTERNATIONAL WORKSHOP, PATMOS 2010, GRENOBLE, FRANCE, SEPTEMBER 7-10, 2010, REVISED SELECTED PAPERS

Springer Science & Business Media This book constitutes the refereed proceedings of the 20th International Conference on Integrated Circuit and System Design, PATMOS 2010, held in Grenoble, France, in

September 2010. The 24 revised full papers presented and the 9 extended abstracts were carefully reviewed and are organized in topical sections on design flows; circuit techniques; low power circuits; self-timed circuits; process variation; high-level modeling of poweraware heterogeneous designs in SystemC-AMS; and minalogic.

FEEDBACK-BASED ORTHOGONAL DIGITAL FILTERS

THEORY, APPLICATIONS, AND IMPLEMENTATION

Springer Science & Business Media Feedback-Based Orthogonal Digital Filters: Theory, Applications, and Implementation develops the theory of a feedback-based orthogonal digital filter and examines several applications where the filter topology leads to a simple and efficient solution. The development of the filter structure is linked to concepts in observer theory. Several signal processing problems can be represented as estimation problems, where a parametric representation of the input is used, to try and replicate it locally. This estimation problem can be solved using an identity observer, and the filter topology falls in this framework. Hence the filter topology represents a universal building block that can find application in several problems, such as spectral estimation, time-recursive computation of transforms, etc. Further, because of the orthogonality constraints satisfied by the structure, it also represents a robust solution under finite precision conditions. The book also presents the observer-based viewpoint of several signal processing problems, and shows that problems that are typically treated independently in the literature are in fact linked and can be cast in a single unified framework. In addition to examining the theoretical issues, the book describes practical issues related to a hardware implementation of the building block, in both the digital and analog domain. On the digital side, issues relating to implementation using semi-custom chips (FPGA's), and ASIC design are examined. On the analog side, the design and testing of a fabricated chip, that functions as a multi-sinusoidal phase-locked-loop, are described. Feedback-Based Orthogonal Digital Filters serves as an excellent reference. May be used as a text for advanced courses on the subject.

ELECTRONIC DESIGN

CIRCADIAN RHYTHMS FOR FUTURE RESILIENT ELECTRONIC SYSTEMS

ACCELERATED ACTIVE SELF-HEALING FOR INTEGRATED CIRCUITS

Springer This book describes methods to address wearout/aging degradations in electronic chips and systems, caused by several physical mechanisms at the device level. The authors introduce a novel technique called accelerated active self-healing, which fixes wearout issues by enabling accelerated recovery. Coverage includes recovery theory, experimental results, implementations and applications, across multiple nodes ranging from planar, FD-SOI to FinFET, based on both foundry provided models and predictive models. Presents novel techniques, tested with experiments on real hardware; Discusses circuit and system level wearout recovery implementations, many of these designs are portable and friendly to the standard design flow; Provides circuit-architecture-system infrastructures that enable the accelerated self-healing for future resilient systems; Discusses wearout issues at both transistor and interconnect level, providing solutions that apply to both; Includes coverage of resilient aspects of emerging applications such as IoT.

ANNUAL CATALOGUE

UNITED STATES AIR FORCE ACADEMY

QUANTIFYING AND EXPLORING THE GAP BETWEEN FPGAS AND ASICS

Springer Science & Business Media Field-programmable gate arrays (FPGAs), which are pre-fabricated, programmable digital integrated circuits (ICs), provide easy access to state-of-the-art integrated circuit process technology, and in doing so, democratize this technology of our time. This book is about comparing the qualities of FPGA – their speed performance, area and power consumption, against custom-fabricated ICs, and exploring ways of mitigating their de ciencies. This work began as a question that many have asked, and few had the resources to answer – how much worse is an FPGA compared to a custom-designed chip? As we dealt with that question, we found that it was far more dif cult to answer than we anticipated, but that the results were rich basic insights on fundamental understandings of FPGA architecture. It also encouraged us to nd ways to leverage those insights to seek ways to make FPGA technology better, which is what the second half of the book is about. While the question "How much worse is an FPGA than an ASIC?" has been a constant sub-theme of all research on FPGAs, it was posed most directly, some time around May 2004, by Professor Abbas El Gamal from Stanford University to us – he was working on a 3D FPGA, and was wondering if any real measurements had been made in this kind of comparison. Shortly thereafter we took it up and tried to answer in a serious way.

LOW POWER VLSI DESIGN AND TECHNOLOGY

ANALOG IC PLACEMENT GENERATION VIA NEURAL NETWORKS FROM UNLABELED DATA

Springer Nature In this book, innovative research using artificial neural networks (ANNs) is conducted to automate the placement task in analog integrated circuit layout design, by creating a generalized model that can generate valid layouts at push-button speed. Further, it exploits ANNs' generalization and push-button speed prediction (once fully trained) capabilities, and details the optimal description of the input/output data relation. The description developed here is chiefly reflected in two of the system's characteristics: the shape of the input data and the minimized loss function. In order to address the latter, abstract and segmented descriptions of both the input data and the objective behavior are developed, which allow the model to identify, in newer scenarios, sub-blocks which can be found in the input data. This approach yields device-level descriptions of the input topology that, for each device, focus on describing its relation to every other device in the topology. By means of these descriptions, an unfamiliar overall topology can be broken down into devices that are subject to the same constraints as a device in one of the training topologies. In the experimental results chapter, the trained ANNs are used to produce a variety of valid placement solutions even beyond the scope of the training/validation sets, demonstrating the model's effectiveness in terms of identifying common components between newer topologies and reutilizing the acquired knowledge. Lastly, the methodology used can readily adapt to the given problem's context (high label production cost), resulting in an efficient, inexpensive and fast model.

LOW POWER DESIGN ESSENTIALS

Springer Science & Business Media This book contains all the topics of importance to the low power designer. It first lays the foundation and then goes on to detail the design process. The book also discusses such special topics as power management and modal design, ultra low power, and low power design methodology and flows. In addition, coverage includes projections of the future and case studies.

FIELD PROGRAMMABLE LOGIC AND APPLICATIONS

9TH INTERNATIONAL WORKSHOPS, FPL'99, GLASGOW, UK, AUGUST 30 - SEPTEMBER 1, 1999, PROCEEDINGS

Springer This book contains the papers presented at the 9th International Workshop on Field ProgrammableLogic and Applications (FPL'99), hosted by the University of Strathclyde in Glasgow, Scotland, August 30 – September 1, 1999. FPL'99 is the ninth in the series of annual FPL workshops. The FPL'99 programme committee has been fortunate to have received a large number of high-quality papers addressing a wide range of topics. From these, 33 papers have been selected for presentation at the workshop and a further 32 papers have been accepted for the poster sessions. A total of 65 papers from 20 countries are included in this volume. FPL is a subject area that attracts researchers from both electronic engine- ing and computer science. Whether we are engaged in research into soft ha- ware or hard software seems to be primarily a question of perspective. What is unquestionable is that the interaction of groups of researchers from di?erent backgrounds results in stimulating and productive research. As we prepare for the new millennium, the premier European forum for - searchers in ?eld programmable logic remains the FPL workshop. Next year the FPL series of workshopswill celebrate its tenth anniversary.The contribution of so many overseas researchers has been a particularly attractive feature of these events, giving them a truly international perspective, while the informal and convivial atmosphere that pervades the workshops have been their hallmark. We look forward to preserving these features in the future while continuing to expand the size and quality of the events.

INTELLIGENT SYSTEM SOLUTIONS FOR AUTO MOBILITY AND BEYOND

ADVANCED MICROSYSTEMS FOR AUTOMOTIVE APPLICATIONS 2020

Springer Nature This book gathers papers from the 23rd International Forum on Advanced Microsystems for Automotive Applications (AMAA 2020) held online from Berlin, Germany, on May 26-27, 2020. Focusing on intelligent system solutions for auto mobility and beyond, it discusses in detail innovations and technologies enabling electrification, automation and diversification, as well as strategies for a better integration of vehicles into the networks of traffic, data and power. Further, the book addresses other relevant topics, including the role of human factors and safety issues in automated driving, solutions for shared mobility, as well as automated bus transport in rural areas. Implications of current circumstances, such as those generated by climate change, on the future development of auto mobility, are also analysed, providing researchers, practitioners and policy makers with an authoritative snapshot of the state-of-the-art, and a source of inspiration for future developments and collaborations.

INSIGHT INTO THEORETICAL AND APPLIED INFORMATICS

INTRODUCTION TO INFORMATION TECHNOLOGIES AND COMPUTER SCIENCE

Walter de Gruyter GmbH & Co KG The book is addressed to young people interested in computer technologies and computer science. The objective of this book is to provide the reader with all the necessary elements to get him or her started in the modern field of informatics and to allow him or her to become aware of the relationship between key areas of computer science. The book is addressed not only to future software developers, but also to all who are interested in computing in a widely understood sense. The authors also expect that some computer professionals will want to review this book to lift themselves above the daily grind and to embrace the excellence of the whole field of computer science. Unlike existing books, this one bypasses issues concerning the construction of computers and focuses only on information processing. Recognizing the importance of the human factor in information processing, the authors intend to present the theoretical foundations of computer science, software development rules, and some business aspects of informatics in non-technocratic, humanistic terms.

ELECTRONIC CONCEPTS

AN INTRODUCTION

Cambridge University Press Electronic Concepts provides a detailed introduction to modern microelectronics. Equal emphasis is placed on analog and digital circuits, and the applications of particular devices and circuits are described within the context of actual electronic systems. The author begins with an overview of several important electronic systems, discussing in detail the types of signals that circuits are used to process. In the following chapters, he deals with individual devices. For each device he presents a brief physical description and demonstrates the use of different models in describing the device's behaviour in a particular circuit application. SPICE computer simulations are used throughout the text to supplement analytic descriptions. The book contains over 500 circuit diagrams and figures, over 400 homework problems, and over 100 simulation and design exercises. It includes many worked examples and is an ideal textbook for introductory courses in electronics. Laboratory experiments are available via the internet.

BOOGARLISTS | DIRECTORY OF ELECTRONICS TECHNOLOGIES

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CIRCUITS AT THE NANOSCALE

COMMUNICATIONS, IMAGING, AND SENSING

CRC Press Circuits for Emerging Technologies Beyond CMOS New exciting opportunities are abounding in the field of body area networks, wireless communications, data networking, and optical imaging. In response to these developments, top-notch international experts in industry and academia present Circuits at the Nanoscale: Communications, Imaging, and Sensing. This volume, unique in both its scope and its focus, addresses the state-of-the-art in integrated circuit design in the context of emerging systems. A must for anyone serious about circuit design for future technologies, this book discusses emerging materials that can take system performance beyond standard CMOS. These include Silicon on Insulator (SOI), Silicon Germanium (SiGe), and Indium Phosphide (InP). Three-dimensional CMOS integration and co-integration with Microelectromechanical (MEMS) technology and radiation sensors are described as well. Topics in the book are divided into comprehensive sections on emerging design techniques, mixed-signal CMOS circuits, circuits for communications, and circuits for imaging and sensing. Dr. Krzysztof Iniewski is a director at CMOS Emerging Technologies, Inc., a consulting company in Vancouver, British Columbia. His current research interests are in VLSI ciruits for medical applications. He has published over 100 research papers in international journals and conferences, and he holds 18 international patents granted in the United States, Canada, France, Germany, and Japan. In this volume, he has assembled the contributions of over 60 world-reknown experts who are at the top of their field in the world of circuit design, advancing the bank of knowledge for all who work in this exciting and burgeoning area.

READINGS IN HARDWARE/SOFTWARE CO-DESIGN

Morgan Kaufmann This title serves as an introduction ans reference for the field, with the papers that have shaped the hardware/software co-design since its inception in the early 90s.

SWITCHED-CAPACITOR TECHNIQUES FOR HIGH-ACCURACY FILTER AND ADC DESIGN

Springer Science & Business Media This book proposes alternative switched capacitor techniques which allow the achievement of higher intrinsic analogue functional accuracy than previously possible in such application areas as analogue filter and ADC design. The validity of the concepts developed and analyzed in Switched-Capacitor Techniques for High-Accuracy Filter and ADC Design has been demonstrated in practice with the design of CMOS SC bandpass filters and algorithmic ADC stages.

ESD

ANALOG CIRCUITS AND DESIGN

John Wiley & Sons A comprehensive and in-depth review of analog circuitlayout, schematic architecture, device, power network and ESDdesign This book will provide a balanced overview of analog circuitdesign layout, analog circuit schematic development,architecture of chips, and ESD design. It will start atan introductory level and will bring the reader right up to thestate-of-the-art. Two critical design aspects for analog and powerintegrated circuits are combined. The first design aspect coversanalog circuit design techniques to achieve the desired circuitperformance. The second and main aspect presents the additionalchallenges associated with the design of adequate and effective ESDprotection elements and schemes. A comprehensive list of practicalapplication examples is used to demonstrate the successfulcombination of both techniques and any potential designtrade-offs. Chapter One looks at analog design discipline, including layoutand analog matching and analog layout design practices. Chapter Twodiscusses analog design with circuits, examining: singletransistor amplifiers; multi-transistor amplifiers; active loadsand more. The third chapter covers analog design layout (alsoMOSFET layout), before Chapters Four and Five discuss analog designsynthesis. The next chapters introduce the reader to analog-digitalmixed signal design synthesis, analog signal pin ESD networks, andanalog ESD power clamps. Chapter Nine, the last chapter, covers ESDdesign in analog applications. Clearly describes analog design fundamentals (circuitfundamentals) as well as outlining the various ESDimplications Covers a large breadth of subjects and technologies, such asCMOS, LDMOS, BCD, SOI, and thick body SOI Establishes an "ESD analog design" discipline thatdistinguishes itself from the alternative ESD digital designfocus Focuses on circuit and circuit design applications Assessible, with the artwork and tutorial style of the ESD bookseries PowerPoint slides are available for university facultymembers Even in the world of digital circuits, analog and power circuitsare two very important but under-addressed topics, especially fromthe ESD aspect. Dr. Voldman's new book will serve as anessential and practical guide to the greater IC community. Withhigh practical and academic values this book is a"bible" for professionals, graduate students, deviceand circuit designers for investigating the physics of ESD and forproduct designs and testing.

LOW-POWER CMOS DESIGN

John Wiley & Sons This collection of important papers provides a comprehensive overview of low-power system design, from component technologies and circuits to architecture, system design, and CAD techniques. LOW POWER CMOS DESIGN summarizes the key low-power contributions through papers written by experts in this evolving field.

INTEGRATED CIRCUIT DESIGN FOR RADIATION ENVIRONMENTS

John Wiley & Sons A practical guide to the effects of radiation on semiconductor components of electronic systems, and techniques for the designing, laying out, and testing of hardened integrated circuits This book teaches the fundamentals of radiation environments and their effects on electronic components, as well as how to design, lay out, and test cost-effective hardened semiconductor chips not only for today's space systems but for commercial terrestrial applications as well. It provides a historical perspective, the fundamental science of radiation, and the basics of semiconductors, as well as radiation-induced failure mechanisms in semiconductor chips. Integrated Circuits Design for Radiation Environments starts by introducing readers to semiconductors and radiation environments (including space, atmospheric, and terrestrial environments) followed by circuit design and layout. The book introduces radiation effects phenomena including single-event effects, total ionizing dose damage and displacement damage) and shows how technological solutions can address both phenomena. Describes the fundamentals of radiation environments and their effects on electronic components Teaches readers how to design, lay out and test cost-effective hardened semiconductor chips for space systems and commercial terrestrial applications Covers natural and man-made radiation environments, space systems and commercial terrestrial applications Provides up-to-date coverage of state-of-the-art of radiation hardening technology in one concise volume Includes questions and answers for the reader to test their knowledge Integrated Circuits Design for Radiation Environments will appeal to researchers and product developers in the semiconductor, space, and defense industries, as well as electronic engineers in the medical field. The book is also helpful for system, layout, process, device, reliability, applications, ESD, latchup and circuit design semiconductor engineers, along with anyone involved in micro-electronics used in harsh environments.

SENSORS AND THEIR APPLICATIONS XII

CRC Press Sensors and Their Applications XII discusses novel research in the areas of sensors and transducers and provides insight into new and topical applications of this technology. It covers the underlying physics, fabrication technologies, and commercial applications of sensors. Some of the topics discussed include optical sensing, sensing materials, no

EXCURSIONS IN HARMONIC ANALYSIS, VOLUME 4

THE FEBRUARY FOURIER TALKS AT THE NORBERT WIENER CENTER

Birkhäuser This volume consists of contributions spanning a wide spectrum of harmonic analysis and its applications written by speakers at the February Fourier Talks from 2002 – 2013. Containing cutting-edge results by an impressive array of mathematicians, engineers and scientists in academia, industry and government, it will be an excellent reference for graduate students, researchers and professionals in pure and applied mathematics, physics and engineering. Topics covered include: Special Topics in Harmonic Analysis Applications and Algorithms in the Physical Sciences Gabor Theory RADAR and Communications: Design, Theory, and Applications The February Fourier Talks are held annually at the Norbert Wiener Center for Harmonic Analysis and Applications. Located at the University of Maryland, College Park, the Norbert Wiener Center provides a state-of- the-art research venue for the broad emerging area of mathematical engineering.

DATA CONVERSION HANDBOOK

*Newnes This comprehensive handbook is a one-stop engineering reference. Covering data converter fundamentals, techniques, applications, and beginning with the basic theoretical elements necessary for a complete understanding of data converters, this reference covers all the latest advances in the field. This text describes in depth the theory behind and the practical design of data conversion circuits as well as describing the different architectures used in A/D and D/A converters. Details are provided on the design of high-speed ADCs, high accuracy DACs and ADCs, and sample-and-hold amplifiers. Also, this reference covers voltage sources and current reference, noise-shaping coding, and sigma-delta converters, and much more. The book's 900-plus pages are packed with design information and application circuits, including guidelines on selecting the most suitable converters for particular applications. You'll find the very latest information on: · Data converter fundamentals, such as key specifications, noise, sampling, and testing · Architectures and processes, including SAR, flash, pipelined, folding, and more · Practical hardware design techniques for mixed-signal systems, such as driving ADCs, buffering DAC outputs, sampling clocks, layout, interfacing, support circuits, and tools. · Data converter applications dealing with precision measurement, data acquisition, audio, display, DDS, software radio and many more. The accompanying CD-ROM provides software tools for testing and analyzing data converters as well as a searchable pdf version of the text. * Brings together a huge amount of information impossible to locate elsewhere. * Many recent advances in converter technology simply aren't covered in any other book. * A must-have design reference for any electronics design engineer or technician.*

ANALYSIS AND DESIGN OF DIGITAL SYSTEMS WITH VHDL

Pws Publishing Company ANALYSIS AND DESIGN OF DIGITAL SYSTEMS WITH VHDL integrates industry-standard hardware description language (VHDL) technology into the undergraduate digital logic course. Author Allen Dewey observes that the widespread use of VHDL in specifying digital system designs is driving change and innovation in industry, and defining a new skill set that engineering students must master to design, model, communicate, and implement digital systems. VHDL provides a formal mechanism for describing digital systems in a format easily processed by computers, succinctly capturing the basic concepts of digital systems engineering and harnessing the power of design automation technology. This book first presents combinational and sequential systems and their design, along with logic families and integrated circuits. It then interlocks these subjects with discussions of structural and data flow modeling, synchronous behavior, and algorithmic modeling of digital systems in VHDL. This dual-track organization of conceptual and VHDL-related material makes the book easily adaptable to one- or two-semester courses and a variety of teaching approaches.

SCIENTIFIC AND TECHNICAL AEROSPACE REPORTS

HIGHLY INTEGRATED LOW POWER RADARS

Artech House In recent years, advances in radio detection and ranging technology, sustained by new achievements in the fields of signal processing and electronic components, have permitted the adoption of radars in many civil and defense applications. This resource discusses how highly integrated radar has been adopted by several new markets such as contactless vital sign monitoring (heart rate, breath rate) or harbour traffic control, as well as several applications for vehicle driver assistance. You are provided with scenarios, applications, and requirements, while focusing on the trade-offs

between flexibility, programmability, power consumption, size and weight, and complexity.