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Safety in any workplace is extremely important. In the case of the electrical industry, safety is critical and the codes and regulations which determine safe practices are both diverse and complicated. Employers, electricians, electrical system designers, inspectors, engineers and architects must comply with safety standards listed in the National Electrical Code, OSHA and NFPA 70E. Unfortunately, the publications which list these safety requirements are written in very technically advanced terms and the average person has an extremely difficult time understanding exactly what they need to do to ensure safe installations and working environments. Electrical Safety Code Manual will tie together the various regulations and practices for electrical safety and translate these complicated standards into easy to understand terms. This will result in a publication that is a practical, if not essential, asset to not only designers and company owners but to the electricians who must put compliance requirements into action in the field. Best-practice methods for accident prevention and electrical hazard avoidance Current safety regulations, including new standards from OSHA, NEC, NESC, and NFPA Information on low-, medium-, and high-voltage safety systems Step-by-step guidelines on safety audits Training program how-to's, from setup to rescue and first aid procedures

This book is a collection of selected papers presented at the 10th International Conference on Scientific Computing in Electrical Engineering (SCEE), held in Wuppertal, Germany in 2014. The book is divided into five parts, reflecting the main directions of SCEE 2014: 1. Device Modeling, Electric Circuits and Simulation, 2. Computational Electromagnetics, 3. Coupled Problems, 4. Model Order Reduction, and 5. Uncertainty Quantification. Each part starts with a general introduction followed by the actual papers. The aim of the SCEE 2014 conference was to bring together scientists from academia and industry, mathematicians, electrical engineers, computer scientists, and physicists, with the goal of fostering intensive discussions on industrially relevant mathematical problems, with an emphasis on the modeling and numerical simulation of electronic circuits and devices, electromagnetic fields, and coupled problems. The methodological focus was on model order reduction and uncertainty quantification. this book="" will="" appeal="" to="" mathematicians="" and="" electrical="" engineers="" it="" offers="" a="" valuable="" starting="" point="" for="" developers="" of="" algorithms="" programs="" who="" want="" learn="" about="" recent="" advances="" in="" other="" fields="" as="" well="" open="" problems="" coming="" from="" industry="" moreover,="" be="" use="" representatives="" industry="" with="" an="" interest="" new="" program="" tools="" mathematical="" methods.

This book, written for the benefit of engineering students and practicing engineers alike, is the culmination of the author's four decades of experience related to the subject of electrical mea-

surements, comprising nearly 30 years of experimental research and more than 15 years of teaching at several engineering institutions. The unique feature of this book, apart from covering the syllabi of various universities, is the style of presentation of all important aspects and features of electrical measurements, with neatly and clearly drawn figures, diagrams and colour and b/w photos that illustrate details of instruments among other things, making the text easy to follow and comprehend. Enhancing the chapters are interspersed explanatory comments and, where necessary, footnotes to help better understanding of the chapter contents. Also, each chapter begins with a "recall" to link the subject matter with the related science or phenomenon and fundamental background. The first few chapters of the book comprise "Units, Dimensions and Standards"; "Electricity, Magnetism and Electromagnetism" and "Network Analysis". These topics form the basics of electrical measurements and provide a better understanding of the main topics discussed in later chapters. The last two chapters represent valuable assets of the book, and relate to (a) "Magnetic Measurements", describing many unique features not easily available elsewhere, a good study of which is essential for the design and development of most electric equipment - from motors to transformers and alternators, and (b) "Measurement of Non-electrical Quantities", dealing extensively with the measuring techniques of a number of variables that constitute an important requirement of engineering measurement practices. The book is supplemented by ten appendices covering various aspects dealing with the art and science of electrical measurement and of relevance to some of the topics in main chapters. Other useful features of the book include an elaborate chapter-by-chapter list of symbols, worked examples, exercises and quiz questions at the end of each chapter, and extensive authors' and subject index. This book will be of interest to all students taking courses in electrical measurements as a part of a B.Tech. in electrical engineering. Professionals in the field of electrical engineering will also find the book of use.

Offshore Electrical Engineering Manual, Second Edition, is for electrical engineers working on offshore projects who require detailed knowledge of an array of equipment and power distribution systems. The book begins with coverage of different types of insulation, hot-spot temperatures, temperature rise, ambient air temperatures, basis of machine ratings, method of measurement of temperature rise by resistance, measurement of ambient air temperature. This is followed by coverage of AC generators, automatic voltage regulators, AC switchgear transformers, and programmable electronic systems. The emphasis throughout is on practical, ready-to-apply techniques that yield immediate and cost-effective benefits. The majority of the systems covered in the book operate at a nominal voltage of 24 y dc and, although it is not necessary for each of the systems to have separate battery and battery charger systems, the grouping criteria require more

detailed discussion. The book also provides information on equipment such as dual chargers and batteries for certain vital systems, switchgear tripping/closing, and engine start batteries which are dedicated to the equipment they supply. In the case of engines which drive fire pumps, duplicate charges and batteries are also required. Packed with charts, tables, and diagrams, this work is intended to be of interest to both technical readers and to general readers. It covers electrical engineering in offshore situations, with much of the information gained in the North Sea. Some topics covered are offshore power requirements, generator selection, process drivers and starting requirements, control and monitoring systems, and cabling and equipment installation. Discusses how to perform inspections of electrical and instrument systems on equipment using appropriate regulations and specifications. Explains how to ensure electrical systems/components are maintained and production is uninterrupted. Demonstrates how to repair, modify, and install electrical instruments ensuring compliance with current regulations and specifications. Covers specification, management, and technical evaluation of offshore electrical system design. Features evaluation and optimization of electrical system options including DC/AC selection and offshore cabling designs.

A large international conference in Electrical Engineering and Applied Computing was just held in London, 30 June - 2 July, 2010. This volume will contain revised and extended research articles written by prominent researchers participating in the conference. Topics covered include Control Engineering, Network Management, Wireless Networks, Biotechnology, Signal Processing, Computational Intelligence, Data Mining, Computational Statistics, Internet Computing, High Performance Computing, and industrial applications. The book will offer the states of arts of tremendous advances in electrical engineering and applied computing and also serve as an excellent reference work for researchers and graduate students working on electrical engineering and applied computing.

This first volume, edited and authored by world leading experts, gives a review of the principles, methods and techniques of important and emerging research topics and technologies in machine learning and advanced signal processing theory. With this reference source you will: Quickly grasp a new area of research. Understand the underlying principles of a topic and its application. Ascertain how a topic relates to other areas and learn of the research issues yet to be resolved. Quick tutorial reviews of important and emerging topics of research in machine learning. Presents core principles in signal processing theory and shows their applications. Reference content on core principles, technologies, algorithms and applications. Comprehensive references to journal articles and other literature on which to build further, more specific and detailed knowledge. Edited by leading people in the field who, through their reputation, have been able to commission experts to write on a particular topic.

Issues in Electrical, Computer, and Optical Engineering: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Electrical, Computer, and Optical Engineering. The editors have built Issues in Electrical, Computer, and Optical Engineering: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Electrical, Computer, and Optical Engineering in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Electrical, Computer, and Optical Engineering: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all

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Packed with precise, step-by-step checklists, detailed illustrations, and informative chapter explanations, the Electrical Inspection Manual, 2011 Edition identifies important Code rules and provides guidance on how-to organize checklists by occupancy type to increase thoroughness and decrease the likelihood of overlooking potential problems. Written by certified electrical inspectors, and endorsed by the National Fire Protection Association (NFPA) and the International Association of Electrical Inspectors (IAEI), this fully illustrated manual explains significant tasks, defines terms, outlines key questions, and provides a concise overview of the electrical inspection process.

Welcome to the proceedings of PATMOS 2003. This was the 13th in a series of international workshops held in several locations in Europe. Over the years, PATMOS has gained recognition as one of the major European events devoted to power and timing aspects of integrated circuit and system design. Despite its significant growth and development, PATMOS can still be considered as a very informal forum, featuring high-level scientific presentations together with open discussions and panel sessions in a free and relaxed environment. This year, PATMOS took place in Turin, Italy, organized by the Politecnico di Torino, with technical co-sponsorship from the IEEE Circuits and Systems Society and the generous support of the European Commission, as well as that of several industrial sponsors, including BullDAST, Cadence, Mentor Graphics, STMicroelectronics, and Synopsys. The objective of the PATMOS workshop is to provide a forum to discuss and investigate the emerging problems in methodologies and tools for the design of new generations of integrated circuits and systems. A major emphasis of the technical program is on speed and low-power aspects, with particular regard to modeling, characterization, design, and architectures.

Key advances in Semiconductor Terahertz (THz) Technology now promises important new applications enabling scientists and engineers to overcome the challenges of accessing the so-called "terahertz gap". This pioneering reference explains the fundamental methods and surveys innovative techniques in the generation, detection and processing of THz waves with solid-state devices, as well as illustrating their potential applications in security and telecommunications, among other fields. With contributions from leading experts, Semiconductor Terahertz Technology: Devices and Systems at Room Temperature Operation comprehensively and systematically covers semiconductor-based room temperature operating sources such as photomixers, THz antennas, radiation concepts and THz propagation as well as room-temperature operating THz detectors. The second part of the book focuses on applications such as the latest photonic and electronic THz systems as well as emerging THz technologies including: whispering gallery resonators, liquid crystals, metamaterials and graphene-based devices. This book will provide support for practicing researchers and professionals and will be an indispensable reference to graduate students in the field of THz technology. Key features: Includes crucial theoretical background sections to photomixers, photoconductive switches and electronic THz generation & detection. Provides an extensive overview of semiconductor-based THz sources and applications. Discusses vital technologies for affordable THz applications. Supports teaching and studying increasingly popular courses on semiconductor THz technology.

Today's most commonly used circuit models increasingly tend to

lose their validity in circuit simulation due to rapid technological developments, miniaturization and increased complexity of integrated circuits. The starting point of this thesis was to tackle these challenges by refining the critical parts of the circuit by combining circuit simulation directly with distributed device models. The approach set out in this thesis couples partial differential equations for electromagnetic devices - modeled by Maxwell's equations -, to differential-algebraic equations, which describe basic circuit elements including memristors and the circuit's topology. First, Maxwell's equations are spatially discretized and a potential formulation is derived, the coupled system is then formulated as a differential-algebraic equation with a properly stated leading term and analyzed. Topological and modeling conditions are presented to guarantee the tractability index of these differential-algebraic equations to be no greater than two. Finally, local solvability, perturbation results and an algorithm to calculate consistent initializations are derived for a general class of differential-algebraic equations with a properly stated leading term having tractability index-2.

Analog Circuit Design contains the contribution of 18 tutorials of the 20th workshop on Advances in Analog Circuit Design. Each part discusses a specific to-date topic on new and valuable design ideas in the area of analog circuit design. Each part is presented by six experts in that field and state of the art information is shared and overviewed. This book is number 20 in this successful series of Analog Circuit Design, providing valuable information and excellent overviews of: Topic 1 : Low Voltage Low Power, chairman: Andrea Baschirotto Topic 2 : Short Range Wireless Front-Ends, chairman: Arthur van Roermund Topic 3 : Power Management and DC-DC, chairman : Michiel Steyaert. Analog Circuit Design is an essential reference source for analog circuit designers and researchers wishing to keep abreast with the latest development in the field. The tutorial coverage also makes it suitable for use in an advanced design course.

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.

Electromagnetic Analysis and Condition Monitoring of Synchronous Generators Discover an insightful and complete overview of electromagnetic analysis and fault diagnosis in large synchronous generators In Electromagnetic Analysis and Condition Monitoring of Synchronous Generators, a team of distinguished engineers delivers a comprehensive review of the electromagnetic analysis and fault diagnosis of synchronous generators. Beginning with an introduction to several types of synchronous machine structures, the authors move on to the most common faults found in synchronous generators and their impacts on performance. The book includes coverage of different modeling tools, including the finite element method, winding function, and magnetic equivalent circuit, as well as various types of health monitoring systems focusing on the magnetic field, voltage, current, shaft flux, and vibration. Finally, Electromagnetic Analysis and Condition Monitoring of Synchronous Generators covers signal processing tools that can help identify hidden patterns caused by faults and machine learning tools enabling automated condition monitoring. The book also includes: A thorough introduction to condition monitoring in electric machines and its importance to synchronous generators Comprehensive explorations of the classification of synchronous generators, including armature arrangement, machine construction, and applications Practical discussions of different types of electrical and mechanical faults in synchronous generators, including short circuit faults, eccentricity faults, misalignment, core-related faults, and broken damper bar faults In-depth examinations of the modeling of healthy and faulty synchronous generators, including analytical and numerical methods Perfect for engineers working in electrical machine analysis, maintenance, and fault detection, Electromagnetic Analysis and Condition Monitoring of Synchronous Generators is also an indispensable resource for professors and students in electrical power engineering.

As an electrical inspector, you are required to answer these and other more complex questions to ensure jobs conform to the National Electrical Code and do not present any hazards due to substandard workmanship. Electrical Inspection Manual, 2011 Edition, provides all the tips, information, and guidance you'll need to accomplish this. Based on the 2011 National Electrical Code, Electrical Inspection Manual presents detailed checklists covering every aspect of the electrical inspection process to aid in the organization and performance of electrical inspections. Packed with precise, step-by-step checklists, detailed illustrations, and informative chapter explanations, the text identifies important Code rules and provides guidance on how to organize checklists by occupancy type to increase thoroughness and decrease the likelihood of overlooking potential problems. Written by certified electrical inspectors, and endorsed by the National Fire Protection Association (NFPA) and the International Association of Electrical Inspectors (IAEI), this fully illustrated manual explains significant tasks, defines terms, outlines key questions, and provides a concise overview of the electrical inspection process. This manual also comes with a CD-ROM containing the text's entire collection of checklists, allowing you to easily duplicate these detailed and numbered inspection activities to use in the field.

This book presents a concise and insightful view of the knowledge on fractional-order electrical circuits, which belongs to the subject of Electric Engineering and involves mathematics of fractional calculus. It offers an overview of fractional calculus and then describes and analyzes the basic theories and properties of fractional-order elements and fractional-order electrical circuit composed of fractional-order elements. Therein, the fundamental theorems, time-domain analysis, steady-state analysis, complex frequency domain analysis and state variable analysis of fractional-order

electrical circuit are included. The fractional-order two-port networks and generalized fractional-order linear electrical circuits are also mentioned. Therefore, this book provides readers with enough background and understanding to go deeper into the topic of fractional-order electrical circuit, so that it is useful as a textbook for courses related to fractional-order elements, fractional-order electrical circuits, etc. This book is intended for students without an extensive mathematical background and is suitable for advanced undergraduate and graduate students, engineers and researchers who focus on the fractional-order elements, electrical circuits and systems.

Artificial intelligence has been applied to many areas of science and technology, including the power and energy sector. Renewable energy in particular has experienced the tremendous positive impact of these developments. With the recent evolution of smart energy technologies, engineers and scientists working in this sector need an exhaustive source of current knowledge to effectively cater to the energy needs of citizens of developing countries. Computational Methodologies for Electrical and Electronics Engineers is a collection of innovative research that provides a complete insight and overview of the application of intelligent computational techniques in power and energy. Featuring research on a wide range of topics such as artificial neural networks, smart grids, and soft computing, this book is ideally designed for programmers, engineers, technicians, ecologists, entrepreneurs, researchers, academicians, and students.

Issues in Logic, Operations, and Computational Mathematics and Geometry: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Logic, Operations, and Computational Mathematics and Geometry. The editors have built Issues in Logic, Operations, and Computational Mathematics and Geometry: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Logic, Operations, and Computational Mathematics and Geometry in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Logic, Operations, and Computational Mathematics and Geometry: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

This book is a printed edition of the Special Issue "Electric Power Systems Research" that was published in Energies

Issues in Earth Sciences, Geology, and Geophysics: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Earth Sciences, Geology, and Geophysics. The editors have built Issues in Earth Sciences, Geology, and Geophysics: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Earth Sciences, Geology, and Geophysics in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Earth Sciences, Geology, and Geophysics: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

This Special Issue with 35 published articles shows the significance of the topic "Signal Processing and Analysis of Electrical Circuit". This topic has been gaining increasing attention in recent times. The presented articles can be categorized into four different areas: signal processing and analysis methods of electrical circuits; electrical measurement technology; applications of signal processing of electrical equipment; fault diagnosis of electrical circuits. It is a fact that the development of electrical systems, signal processing methods, and circuits has been accelerating. Electronics applications related to electrical circuits and signal processing methods have gained noticeable attention in recent times. The methods of signal processing and electrical circuits are widely used by engineers and scientists all over the world. The constituent papers represent a significant contribution to electronics and present applications that can be used in industry. Further improvements to the presented approaches are required for realizing their full potential.

This book includes extended and revised selected papers from the 10th International Conference on Smart Cities and Green ICT Systems, SMARTGREENS 2021, and 7th International Conference on Vehicle Technology and Intelligent Transport Systems, VEHITS 2021, held as virtual event, in April 28-30, 2021. The conference was held virtually due to the COVID-19 crisis. The 22 full papers included in this book were carefully reviewed and selected from 140 submissions. The papers present research on advances and applications in the fields of smart cities, electric vehicles, sustainable computing and communications, energy aware systems and technologies, intelligent vehicle technologies, intelligent transport systems and infrastructure, connected vehicles.

Railway transportation has become one of the main technological advances of our society. Since the first railway used to carry coal from a mine in Shropshire (England, 1600), a lot of efforts have been made to improve this transportation concept. One of its milestones was the invention and development of the steam locomotive, but commercial rail travels became practical two hundred years later. From these first attempts, railway infrastructures, signalling and security have evolved and become more complex than those performed in its earlier stages. This book will provide readers a comprehensive technical guide, covering these topics and presenting a brief overview of selected railway systems in the world. The objective of the book is to serve as a valuable reference for students, educators, scientists, faculty members, researchers, and engineers.

A professional guide to the fundamentals of power integrity analysis with an emphasis on silicon level power integrity Power Integrity for Electrical and Computer Engineers embraces the most recent changes in the field, offers a comprehensive introduction to the discipline of power integrity, and provides an overview of the fundamental principles. Written by noted experts on the topic, the book goes beyond most other resources to focus on the detailed aspects of silicon and optimization techniques in order to broaden the field of study. This important book offers coverage of a wide range of topics including signal analysis, EM concepts for PI, frequency domain analysis for PI, numerical methods (overview) for PI, and silicon device PI modeling. Power Integrity for Electrical and Computer Engineers examine platform technologies, system considerations, power conversion, system level modeling, and optimization methodologies. To reinforce the material presented, the authors include example problems. This important book: • Includes coverage on convergence, accuracy, and error analysis and explains how these can be used to analyze power integrity problems • Contains information for modeling the power converter from the PDN to the load in a full system level model • Explores areas of device level modeling of silicon as related to power integrity • Contains example word problems that are relat-

ed to an individual chapter's subject. Written for electrical and computer engineers and academics, *Power Integrity for Electrical and Computer Engineers* is an authoritative guide to the fundamentals of power integrity and explores the topics of power integrity analysis, power integrity analytics, silicon level power integrity, and optimization techniques.

This book covers state-of-the-art technologies, principles, methods and industrial applications of electronic waste (e-waste) and waste PCB (WPCB) recycling. It focuses on cutting-edge mechanical separation processes and pyro- and hydro-metallurgical treatment methods. De-soldering, selective dismantling, and dry separation methods (including the use of gravity, magnetic and electrostatic techniques) are discussed in detail, noting the patents related to each. The volume discusses the available industrial equipment and plant flowsheets used for WPCB recycling in detail, while addressing potential future directions of the field. This practical, comprehensive, and multidisciplinary reference will appeal to professionals throughout global industrial, academic and government institutions interested in addressing the growing problem of e-waste. Covers principles, methods and industrial applications of e-waste and PCB recycling; Details state-of-the-art mechanical separation processes and pyro- and hydro-metallurgical treatment methods; Describes the available industrial equipment used and plant flowsheets for PCB recycling and addresses potential future developments of this important field.

Laboratory Manual for Electrical Machines (2nd) edition includes four new experiments in electrical machines so that it can cater to the complete syllabus of undergraduate laboratory courses of electrical machines. This book gives the basic information to the students with the machine phenomenon, working principles and testing methods, etc. It also imparts real physical understanding of various types of electrical machines. The main attraction of this laboratory manual is its power point presentation for all experiments. This manual is meant for electrical engineering students of B.E. and B.Tech and polytechnics.

HEAVY DUTY TRUCK SYSTEMS, 5th EDITION is a best-selling introduction to servicing medium-and heavy-duty trucks, providing a strong foundation of content on Electricity and Electronics, Power Train, Steering and Suspension, Brakes, and Accessories Systems. The fifth edition has been updated throughout including an introduction to Eaton DM clutches and comprehensive coverage of Caterpillar's new highway vocational transmission, updates of electricity and electronics to cover new battery technology, and coverage of new FMVSS 121 (2009) stopping distance for semi-combinations. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This book evaluates the influence of process variations (e.g. work-function fluctuations) and radiation-induced soft errors in a set of logic cells using FinFET technology, considering the 7nm technological node as a case study. Moreover, for accurate soft error estimation, the authors adopt a radiation event generator tool (MUSCA SEP3), which deals both with layout features and electrical properties of devices. The authors also explore four circuit-level techniques (e.g. transistor reordering, decoupling cells, Schmitt Trigger, and sleep transistor) as alternatives to attenuate the unwanted effects on FinFET logic cells. This book also evaluates the mitigation tendency when different levels of process variation, transistor sizing, and radiation particle characteristics are applied in the design. An overall comparison of all methods addressed by this work is provided allowing to trace a trade-off between the reliability gains and the design penalties of each approach regarding the area, performance, power consumption, single event transient (SET) pulse width, and SET cross-section.

This book describes several techniques to address variation-related design challenges for analog blocks in mixed-signal systems-on-chip. The methods presented are results from recent research works involving receiver front-end circuits, baseband filter linearization, and data conversion. These circuit-level techniques are described, with their relationships to emerging system-level calibration approaches, to tune the performances of analog circuits with digital assistance or control. Coverage also includes a strategy to utilize on-chip temperature sensors to measure the signal power and linearity characteristics of analog/RF circuits, as demonstrated by test chip measurements. Describes a variety of variation-tolerant analog circuit design examples, including from RF front-ends, high-performance ADCs and baseband filters; Includes built-in testing techniques, linked to current industrial trends; Balances digitally-assisted performance tuning with analog performance tuning and mismatch reduction approaches; Describes theoretical concepts as well as experimental results for test chips designed with variation-aware techniques.

Professor Ker is on the Board of Amazingneuron. The Other Topic Editors Declare no Competing Interests With Regards to the Research Topic Theme.

This book presents state-of-the-art analog and power management IC design techniques for various wireless power transfer (WPT) systems. To create elaborate power management solutions, circuit designers require an in-depth understanding of the characteristics of each converter and regulator in the power chain. This book addresses WPT design issues at both system- and circuit-level, and serves as a handbook offering design insights for research students and engineers in the integrated power electronics area.

This book describes the design of CMOS circuits for ultra-low power consumption including analog, radio frequency (RF), and digital signal processing circuits (DSP). The book addresses issues from circuit and system design to production design, and applies the ultra-low power circuits described to systems for digital hearing aids and capsule endoscope devices. Provides a valuable introduction to ultra-low power circuit design, aimed at practicing design engineers; Describes all key building blocks of ultra-low power circuits, from a systems perspective; Applies circuits and systems described to real product examples such as hearing aids and capsule endoscopes.

Three-Dimensional Integrated Circuit Design, Second Edition, expands the original with more than twice as much new content, adding the latest developments in circuit models, temperature considerations, power management, memory issues, and heterogeneous integration. 3-D IC experts Pavlidis, Savidis, and Friedman cover the full product development cycle throughout the book, emphasizing not only physical design, but also algorithms and system-level considerations to increase speed while conserving energy. A handy, comprehensive reference or a practical design guide, this book provides effective solutions to specific challenging problems concerning the design of three-dimensional integrated circuits. Expanded with new chapters and updates throughout based on the latest research in 3-D integration: Manufacturing techniques for 3-D ICs with TSVs Electrical modeling and closed-form expressions of through silicon vias Substrate noise coupling in heterogeneous 3-D ICs Design of 3-D ICs with inductive links Synchronization in 3-D ICs Variation effects on 3-D ICs Correlation of WID variations for intra-tier buffers and wires Offers practical guidance on designing 3-D heterogeneous systems Provides power delivery of 3-D ICs Demonstrates the use of 3-D ICs within heterogeneous systems that include a variety of materials, devices, processors, GPU-CPU integration, and more Provides experimental case studies in power delivery, synchronization, and ther-

mal characterization

All papers including in this proceedings had undergone the strict peer-review by the experts before they are accepted for publications. This proceeding covers the subjects of analog circuits and digital circuits, assembly and packaging, biomedical circuits, computer architecture, computer engineering, control engineering, electric power system and automation, energy and power systems, instrumentation engineering, signal processing and other related areas. We hope this proceeding will contribute in stimulating debate and research among scholars, researchers and academicians. CEEE 2014 is to provide a forum for researchers, academicians, engineers, and government officials from all over the world to involved in the general areas of Electronics and Electrical Engineering to disseminate their latest research results and exchange views on the future research directions of these fields. This conference provides opportunities for the participants to exchange new ideas and application experiences face to face.

Motorboat Electrical and Electronics Manual covers all inboard engine boats, from 20' to 120', coastal, inshore, and blue-water vessels. This complete guide to the electrical systems and the electronics for large and small pleasure boats and workboats is a must for all builders, owners and operators, whether they are concerned with new boats or older boats and their maintenance and upgrading. Topics cover everything from diesel engines to refrigeration, and lightning protection to batteries and metal corrosion. This book describes the optimized implementations of several arithmetic datapath, datapath and pseudorandom sequence generator circuits for realization of high performance arithmetic circuits targeted towards a specific family of the high-end Field Programmable Gate Arrays (FPGAs). It explores regular, modular, cascadable and bit-sliced architectures of these circuits, by directly instantiating the target FPGA-specific primitives in the HDL. Every proposed architecture is justified with detailed mathematical analyses. Simultaneously, constrained placement of the circuit building blocks is performed, by placing the logically related hardware primitives in close proximity to one another by supplying relevant placement constraints in the Xilinx proprietary "User Constraints File". The book covers the implementation of a GUI-based CAD tool named FlexiCore integrated with the Xilinx Integrated Software Environment (ISE) for design automation of platform-specific high-performance arithmetic circuits from user-level specifications. This tool has been used to implement the proposed circuits, as well as hardware implementations of integer arithmetic algorithms where several of the proposed circuits are used as building blocks. Implementation results demonstrate higher performance and superior operand-width scalability for the proposed circuits, with respect to implementations derived through other existing approaches. This book will prove useful to researchers, students and professionals engaged in the domain of FPGA circuit

optimization and implementation.

This book teaches the skills and knowledge required by today's RF and microwave engineer in a concise, structured and systematic way. Reflecting modern developments in the field, this book focuses on active circuit design covering the latest devices and design techniques. From electromagnetic and transmission line theory and S-parameters through to amplifier and oscillator design, techniques for low noise and broadband design; This book focuses on analysis and design including up to date material on MMIC design techniques. With this book you will: Learn the basics of RF and microwave circuit analysis and design, with an emphasis on active circuits, and become familiar with the operating principles of the most common active system building blocks such as amplifiers, oscillators and mixers Be able to design transistor-based amplifiers, oscillators and mixers by means of basic design methodologies Be able to apply established graphical design tools, such as the Smith chart and feedback mappings, to the design RF and microwave active circuits Acquire a set of basic design skills and useful tools that can be employed without recourse to complex computer aided design Structured in the form of modular chapters, each covering a specific topic in a concise form suitable for delivery in a single lecture Emphasis on clear explanation and a step-by-step approach that aims to help students to easily grasp complex concepts Contains tutorial questions and problems allowing readers to test their knowledge An accompanying website containing supporting material in the form of slides and software (MATLAB) listings Unique material on negative resistance oscillator design, noise analysis and three-port design techniques Covers the latest developments in microwave active circuit design with new approaches that are not covered elsewhere

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