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Electrical Engineering 2018

New and Forthcoming Titles



Welcome

Welcome to the 2018 Electrical Engineering Catalogue.

Electrical Engineering generally deals with the study and application of electricity, electronics, and electromagnetism, and includes subfields such as circuits and devices, communications, RF and microwaves, image processing, power engineering, power electronics, industrial electronics, sensors, instrumentation and measurement, signal processing, systems and controls, optics, lasers, and photonics. Electrical Engineering encompasses the design and development of micro, nano, and smart technologies, complementary metal-oxide-semiconductor (CMOS) devices, wireless multimedia communication systems, and more.

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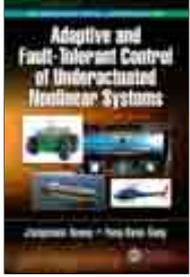
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Adaptive and Fault-Tolerant Control of Underactuated Nonlinear Systems



Jiangshuai Huang and Yong-Duan Song, Chongqing University, China

Series: *Automation and Control Engineering*

The book focuses on adaptive and fault-tolerant control of underactuated nonlinear systems. For the tracking and stabilization control of underactuated mechanical systems, many methodologies have been proposed. In response to some of these issues, four important problems are solved in this book, including control of underactuated nonlinear systems with input saturation, output-feedback control in the presence of parametric uncertainties, fault-tolerant control of underactuated ships with or without actuator redundancy, and adaptive control of multiple underactuated nonlinear systems, including formation control and flocking control of multiple underactuated systems.

CRC Press

Market: Engineering - Electrical

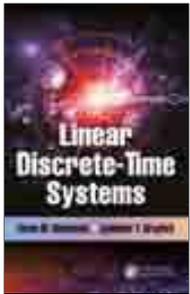
December 2017: 6-1/8 x 9-1/4: 244pp

Hb: 978-1-138-08902-0: \$149.95

eBook: 978-1-315-10949-7

* For full contents and more information, visit: www.crcpress.com/9781138089020

Linear Discrete-Time Systems



Zoran M. Buchevats, University of Belgrade, Serbia and Lyubomir T. Gruyitch, University of Technology of Belfort–Montbéliard, France (Retired)

This book shows the completion of the theory of the linear discrete-time time-invariant dynamical systems; the reader will gain the ability to use it for all real conditions of the system work, in forced regimes under arbitrary initial conditions, and be able to study and design the dynamical systems by using novel theoretical tools. The book provides knowledge of discovered fundamental dynamical characteristic of the systems, the full transfer function matrix (z), definitions and determinations, for three classes of the systems, *IO*, *ISO* and *IIO*

CRC Press

Market: Engineering - Electrical

November 2017: 6-1/8 x 9-1/4: 454pp

Hb: 978-1-138-03959-9: \$149.95

eBook: 978-1-138-03962-9

* For full contents and more information, visit: www.crcpress.com/9781138039599

2nd Edition · NEW EDITION

Near-Earth Laser Communications, Second Edition

Edited by Hamid Hemmati, Jet Propulsion Laboratory, Pasadena, California, USA

Series: *Optical Science and Engineering*

This reference provides an overview of near-earth laser communication theory developments including component and subsystem technologies, fundamental limitations, and approaches to reach those limits. It covers basic concepts and state-of-the-art technologies, emphasizing device technology, implementation techniques, and system trades. The authors discuss hardware technologies and their applications, and also explore ongoing research activities and those planned for the near future. This new edition includes two new chapters on coherent laser communication links and all-optical satellite communication networks.

CRC Press

August 2018: 6-1/8 x 9-1/4: 475pp

Hb: 978-1-498-77740-7: \$229.95

eBook: 978-1-498-77741-4

Prev. Ed Hb: 978-0-824-75381-8

* For full contents and more information, visit: www.crcpress.com/9781498777407

3D Integration in VLSI Circuits

Implementation Technologies and Applications

Edited by **Katsuyuki Sakuma**, IBM T. J. Watson Research Center, Hawthorne, New York, USA

Series: *Devices, Circuits, and Systems*

Currently, the term 3D integration includes a wide variety of different integration methods, such as 2.5-dimensional (2.5D) interposer-based integration, 3D integrated circuits (3D ICs), 3D systems-in-package (SiP), 3D heterogeneous integration, and monolithic 3D ICs. The goal of this book is to provide readers with an understanding of the latest challenges and issues in 3D integration. TSVs are not the only technology element needed for 3D integration. There are numerous other key enabling technologies required for 3D integration and the speed of the development in this emerging field is very rapid.

CRC Press

Market: Engineering - Electrical
May 2018: 6-1/8 x 9-1/4: 248pp
Hb: 978-1-138-71039-9: **\$139.95**
eBook: 978-1-315-20069-9

* For full contents and more information, visit: www.crcpress.com/9781138710399

Arduino-Based Embedded Systems

Interfacing, Simulation, and LabVIEW GUI



Rajesh Singh, Anita Gehlot, Bhupendra Singh, Schematics Microelectronics, Dehradun, INDIA and Sushabhan Choudhury

Arduino is an open-source electronics platform based on easy-to-use hardware and software while LabVIEW is a graphical programming telling how to connect functions and work with a variety of datatypes when constructing applications. This book will help beginners to get started with Arduino-based embedded systems including essential know-how of the programming and interfacing of the devices. Book includes programming and simulation of Arduino-based projects and interfacing with LabVIEW, based on practical case studies. The book comprises of total twenty five chapters with description, working model

of LabVIEW and programming with Arduino IDE.

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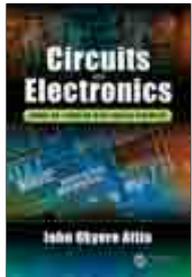
Market: Engineering - Electrical
November 2017: 6-1/8 x 9-1/4: 312pp
Hb: 978-1-138-06078-4: **\$89.95**
eBook: 978-1-315-16288-1

* For full contents and more information, visit: www.crcpress.com/9781138060784

TEXTBOOK · READER

Circuits and Electronics

Hands-on Learning with Analog Discovery



John Okyere Attia, Prairie View A&M University, Texas, USA

The book provides instructions on building circuits on breadboards, connecting the Analog Discovery wires to the circuit under test, and making electrical measurements. Various measurement techniques are described and used in this book, including: impedance measurements, complex power measurements, frequency response measurements, power spectrum measurements, current versus voltage characteristic measurements of diodes, bipolar junction transistors, and Mosfets. The book includes end-of-chapter problems for additional exercises geared towards hands-on learning, experimentation, comparisons between measured results and those obtained from theoretical calculations.

CRC Press

Market: Engineering - Electrical
November 2017: 6-1/8 x 9-1/4: 187pp
Hb: 978-1-138-29732-6: **\$89.95**
eBook: 978-1-315-09866-1

* For full contents and more information, visit: www.crcpress.com/9781138297326

Dynamics of Electrical Machines

Practical Examples in Energy and Transportation Systems

M. Kemal Sarioglu, Bulent Bilir, Metin Gökaşan and Seta Bogosyan

Series: *Industrial Electronics*

This book provides a circuits and systems approach to the derivation and analysis of electrical machine dynamics, presenting one generalized method for describing and understanding the behavior of all electrical machines and their drives. Using practical MATLAB®- and Simulink®-based examples from motor control, renewable energy, and transportation systems, the text shows how to model transient and steady-state behaviors and covers electrical machinery control, the generation of control signals, and the transmission of these signals to electrical machines. Each chapter features homework problems for applied learning.

CRC Press

Market: Engineering - Electrical
November 2018: 7 x 10: 500pp
Hb: 978-1-466-51705-9: **\$139.95**
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Extending Moore's Law through Advanced Semiconductor Design and Processing Techniques

Wynand Lambrechts, University of Johannesburg, Gauteng, South Africa, **Saurabh Sinha, Jassem Ahmed Abdallah and Jaco Prinsloo**, Nanoteq, Gauteng, South Africa

The aim of this book is to provide detailed and technical reviews on all factors that have influenced Moore's law and all factors that play a role in determining its longevity for future technologies. These factors additionally include design-for-manufacturability and considerations in microelectronic circuit architecture which aims to provide designers and researchers to implement circuit layout techniques which take advantage of advanced processing techniques that increase feature density and circuit yield.

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Market: Engineering - Electrical
August 2018: 6-1/8 x 9-1/4: 264pp
Hb: 978-0-815-37074-1: **\$149.95**
eBook: 978-1-351-24867-9

* For full contents and more information, visit: www.crcpress.com/9780815370741

FPGA based Embedded System Developer's Guide



A. Arockia Basil Raj, Defence Institute of Advanced Technology, Pune, Maharashtra, India

The book covers various aspects of VHDL programming and FPGA interfacing with examples and sample codes giving an overview of VLSI technology, digital circuits design with VHDL, programming, components, functions and procedures, and arithmetic designs followed by coverage of the core of external I/O programming, algorithmic state machine based system design, and real-world interfacing examples.

CRC Press

Market: Engineering - Electrical
February 2018: 7 x 10: 696pp
Hb: 978-1-498-79675-0: **\$189.95**
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* For full contents and more information, visit: www.crcpress.com/9781498796750

High-Speed and Lower Power Technologies

Electronics and Photonics

Edited by **Jung Han Choi**, Fraunhofer Institute, Berlin, Germany and **Krzysztof Iniewski**, Emerging Technologies CMOS Inc., British Columbia, Canada

Series: Devices, Circuits, and Systems

This book explores up-to-date research trends and achievements on low-power and high-speed technologies in both electronics and optics. It offers unique insight into low-power and high-speed approaches ranging from devices, ICs, sub-systems and networks that can be exploited for future mobile devices, 5G networks, and Internet of Things (IoT). It considers the interconnections between modules or servers using electrical and optical technologies and the packaging for lower-power system and networks. Written by top international experts in both industry and academia, the book discusses new devices, such as Si-on-chip laser, interconnection using graphene ribbons and 2-dimensional semiconductor, and low-power FPGA and network processors.

CRC Press

Market: Engineering - Electrical

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Hb: 978-0-815-37441-1: **\$149.95**

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* For full contents and more information, visit: www.crcpress.com/9780815374411

Thermal-Aware Testing of Digital VLSI Circuits and Systems

Santanu Chattopadhyay, Department of Electronics and Electrical Communication Engineering, Indian Institute of Technology Kharagpur, West Bengal, India

Thermal-aware testing can be employed both at circuit level and at system level. While the circuit level techniques address issues in reducing the temperature of individual circuit modules within a chip, system level ones deal with test scheduling problems. Typical circuit level techniques include test vector reordering, don't care bit filling, and scan chain structuring. System level tools deal with scheduling of core tests and test data compression in system-on-chip (SoC) and network-on-chip (NoC) designs. The book aims to highlight the research activities in the domain of thermal-aware testing.

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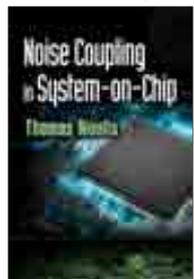
October 2018: 128pp

Hb: 978-0-815-37882-2: **\$70.00**

eBook: 978-1-351-22778-0

* For full contents and more information, visit: www.crcpress.com/9780815378822

Noise Coupling in System-on-Chip



Edited by **Thomas Noulis**, Aristotle University of Thessaloniki, Greece

Series: Devices, Circuits, and Systems

Written by leading international experts in the field, the book explores the hottest topics in Systems on Chip (SoC) Coupling, including substrate and interconnect magnetic crosstalk, 2D and 3D circuits noise coupling, TSV and simulation, sensing and optimization. The text provides instruction on identifying sensitive crosstalk paths onto the SoC, simulating coupling propagating via multiple paths across the SoC, avoiding or optimizing noise coupling that degrades SoC performance, and reducing the overall design cycle time. It enables the reader to analyze crosstalk noise propagating, not just through the

substrate, but also through the parasitics interconnect and package and the PCB.

CRC Press

Market: Engineering - Electrical

December 2017: 6-1/8 x 9-1/4: 496pp

Hb: 978-1-498-79677-4: **\$149.95**

eBook: 978-1-138-03161-6

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X-Ray Diffraction Imaging

Technology and Applications

Edited by **Joel Greenberg**, Duke University, Durham, North Carolina, USA and **Krzysztof Iniewski**, Emerging Technologies CMOS Inc., British Columbia, Canada

Series: Devices, Circuits, and Systems

The ability to perform spatially-resolved material discrimination significantly enhances the performance of medical and industrial radiography, as well as contraband and explosives detection systems. Coherent scatter imaging has been the most promising approach because of its capacity to provide material-specific signatures in optically thick materials. Coherent scattering mechanism forms a basis of the x-ray diffraction imaging that is a subject of this book. The x-ray diffraction technology and its various applications in medical, industrial and security fields are also covered.

CRC Press

Market: Engineering - Electrical

July 2018: 6-1/8 x 9-1/4: 300pp

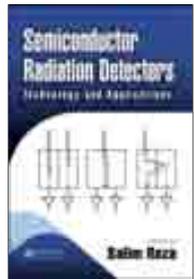
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Semiconductor Radiation Detectors

Technology and Applications



Edited by **Salim Reza**, Mid Sweden University, Sundsvall, Sweden

Series: Devices, Circuits, and Systems

This book is a collection of chapters containing carefully selected topics on the most recent advancements in semiconductor radiation detector technologies. The reader will gain a thorough understanding of radiation detectors, from sensor to read-out electronics to applications. Relatively new detector materials, such as CdZTe and Cr compensated GaAs, are introduced, along with emerging applications of radiation detectors. Furthermore, this book covers a wide range of topics on radiation detectors, which will satisfy the needs of both beginners and experts in the field.

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Market: Engineering - Electrical

October 2017: 6-1/8 x 9-1/4: 290pp

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eBook: 978-1-315-20072-9

* For full contents and more information, visit: www.crcpress.com/9781138710344

TEXTBOOK · READER

Electromagnetism Principles

Korey Sorge, Florida Atlantic University, Boca Raton, FL, USA and Maarij Syed, Rose-Hulman Institute of Technology, Avon, IN, USA

This textbook is designed for Electromagnetism I. It meets the needs of professors and students by encompassing all classical and necessary fundamentals into a single comprehensive text by restructuring presentation, simplifying mathematics, and reinforcing physics. It includes the Gilbert model of magnetism and covers optics at an introductory level, providing insight to geometric optics, physical optics, and diffraction. Mathematica is used throughout and downloads are available from the authors' website. Homework problems and solutions manuals are supplied for adopting professors.

CRC Press

August 2018: 7 x 10: 400pp

Hb: 978-1-439-88627-4: **\$89.95**

eBook: 978-1-439-88739-4

* For full contents and more information, visit: www.crcpress.com/9781439886274**Energy Efficient Computing: Devices, Circuits, and Systems**

Edited by Santosh K. Kurinec, Rochester Institute of Technology, New York, USA and Sumeet Walia, RMIT University, Victoria, Australia

Series: Devices, Circuits, and Systems

Today's mobile technologies utilize breakthroughs that squeeze more powerful performances into ever-smaller devices—boosting battery life, reducing weight and heat, and virtually eliminating the need for cooling. With billions of new connected devices expected by the end of the decade, each drawing its share of power from a strained global energy grid, low-power designs will be a top priority for years to come. This book investigates new approaches to lower energy requirement in computing and provides comprehensive coverage of various technologies that can help achieve this goal. Chapters are written by international experts in their corresponding field.

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December 2018: 6-1/8 x 9-1/4: 325pp

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Yun Q. Shi, New Jersey Institute of Technology, Newark, USA and Huifang Sun, Mitsubishi Electric Research Lab, Cambridge, Massachusetts, Mitsubishi Electric Research Lab, Massachusetts, USA

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CRC Press

Market: Engineering - Electrical

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eBook: 978-1-315-09795-4

Prev. Ed Hb: 978-0-849-37364-0

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A Practical Handbook

Kristian Sandberg, Computational Solutions, Inc., Boulder, Colorado, US

Although many books have been written on numerical analysis, this handbook aims to be a practical implementation guide collecting equations, tables, theory, and algorithms frequently used when solving computational problems in engineering and science into one single volume. A major goal with this book is to provide intuitive background to abstract concepts in linear algebra, data analysis, and equation solving. In addition to summarizing well-known methods and algorithms in scientific computing, the text will also cover some versatile and powerful algorithms for data analysis and equation solving, which are difficult to find elsewhere.

CRC Press

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November 2018: 7 x 10: 700pp

Hb: 978-1-138-10309-2: **\$139.95**

eBook: 978-1-315-10300-6

* For full contents and more information, visit: www.crcpress.com/9781138103092**The Dynamical Projectors Method**

Hydro and Electrodynamics

Sergey Leble and Anna Perelomova, Gdansk University of Technology

The dynamical projectors method proves to reduce a multicomponent problem to the simplest one-component problem with its solution determined by specific initial or boundary conditions. Its universality and application in many different physical problems make it particularly useful in hydrodynamics, electrodynamics, plasma physics, and boundary layer problems. A great variety of underlying mechanisms are included making this book useful for those working in wave theory, hydrodynamics, electromagnetism, and applications.

CRC Press

Market: Physics

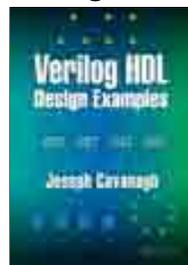
March 2018: 6-1/8 x 9-1/4: 272pp

Hb: 978-1-138-03560-7: **\$179.95**

eBook: 978-1-351-10799-0

* For full contents and more information, visit: www.crcpress.com/9781138035607

TEXTBOOK · READER

Verilog HDL Design Examples

Joseph Cavanagh, Santa Clara University, California, USA

The Verilog language provides a means to model a digital system at many levels of abstraction from a logic gate to a complex digital system to a mainframe computer. The purpose of this book is to present the Verilog language together with a wide variety of examples, so that the reader can gain a firm foundation in the design of the digital system using Verilog HDL. Emphasis is placed on the detailed design of various Verilog projects. The projects include the design module, the test bench module, and the outputs obtained from the simulator that illustrate the complete functional operation of the design. Numerous examples and homework problems are included throughout

the text.

CRC Press

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eBook: 978-1-315-10384-6

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5G Mobile Communications

Concepts and Technologies

Saad Asif, Ministry of IT, Pakistan

This book describes the next evolution of mobile wireless communications, Fifth Generation, explained both from network and device perspective. Chapters and sections are dedicated to illustrate the key stages involved in the development of new generation, 5G including research and technology development, standardization, component, semiconductor and product development, network development, and device and application development. Examples and case studies are provided throughout the text.

CRC Press

Market: Engineering - Electrical

April 2018: 7 x 10: 552pp

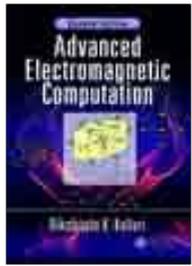
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Dikshitulu K. Kalluri, University of Massachusetts, Lowell, USA

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based on perturbation techniques and three dimensional finite element examples from radiation scattering are included.

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Market: Engineering - Electrical

December 2017: 7 x 10: 362pp

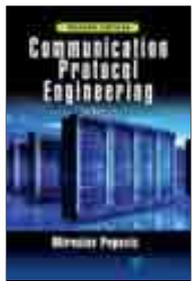
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Miroslav Popovic, University of Novi Sad, Serbia

The book aims to enable the reader to master the engineering of communication protocols, which are amply present nowadays in mobile phones, tablets, laptops, smart appliances, and service provider's datacenters and clouds. Readers will acquire the theoretical knowledge and practical skills to successfully design, implement, test, and verify their solutions. The key benefits of the new edition align with the latest standard for conformance testing, TTCN-3, along with updated chapters. It explains process algebra CSP and how to model, simulate, and automatically verify CSP models in PAT.

CRC Press

Market: Engineering - Electrical

February 2018: 6-1/8 x 9-1/4: 556pp

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Prev. Ed Hb: 978-0-849-39814-8

* For full contents and more information, visit: www.crcpress.com/9781138558120

Digital Signal Processing in Audio and Acoustical Engineering

Francis F. Li and Trevor J. Cox, University of Salford

Starting with the fundamentals of DSP methods and essential maths, this text focuses on DSP in room acoustic measurements, psycho-acoustics related filter design, machine audition (audio quality assessment), spatial audio and array technologies, surface acoustics and room design, audio pattern recognition, codecs and multi-platform delivery of contents. The book represents a new angle of application-oriented DSP techniques in audio. MATLAB is included with downloads available on the CRC site. Mini projects provide an in-depth look by researchers, professionals and students.

CRC Press

August 2018: 6-1/8 x 9-1/4: 475pp

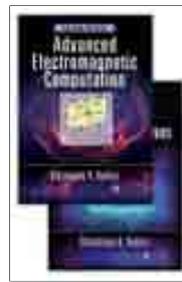
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Dikshitulu K. Kalluri, University of Massachusetts, Lowell, USA

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algorithms. Four new chapters are included.

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Market: Engineering - Electrical

December 2017: 7 x 10: 1014pp

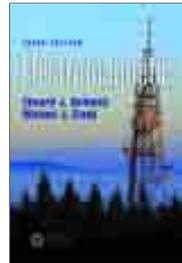
Hb: 978-1-498-73323-6: \$349.95

eBook: 978-1-498-73324-3

* For full contents and more information, visit: www.crcpress.com/9781498733236

3rd Edition · TEXTBOOK · READER

Electromagnetics, Third Edition



Edward J. Rothwell, Michigan State University, East Lansing, USA and Michael J. Cloud, Lawrence Technological University, Southfield, Michigan, USA

Providing an ideal transition from introductory to advanced concepts, this book builds a foundation that allows electrical engineers to confidently proceed with the development of advanced EM studies, research, and applications. New topics include quasistatics, vector spherical wave functions, and wave matrices. Several application-oriented sections covering guided waves and transmission lines, particle dynamics, shielding, electromagnetic material characterization, and antennas have also been added. Mathematical appendices present helpful

background information in the areas of Fourier transforms, dyadics, and boundary value problems.

CRC Press

Market: Engineering - Electrical

April 2018: 7 x 10: 985pp

Hb: 978-1-498-79656-9: \$129.95

eBook: 978-1-498-79658-3

Prev. Ed Hb: 978-1-420-06447-6

* For full contents and more information, visit: www.crcpress.com/9781498796569

Internet of Things (IoT)

Technologies, Applications, Challenges and Solutions



Edited by **BK Tripathy**, School of Computing Science and Engineering, VIT University, Vellore, INDIA and **J Anuradha**, School of Computing Science and Engineering, VIT University, Vellore, INDIA

The basic objective of this volume is for better understanding the current trends, technologies, challenges in IoT exposing their current status and providing possible solutions. This volume deals with the processes involved in surpassing diversified architecture, protocol, communications, integrity and security along with ubiquitous data collection, potential for unexpected uses of consumer data and heightened security risks. Also, the applications of IoT in agriculture, hospital, human assisted living, health care is included.

CRC Press

Market: Electrical Engineering
October 2017: 7 x 10: 334pp
Hb: 978-1-138-03500-3: **\$139.95**
eBook: 978-1-315-26984-9

* For full contents and more information, visit: www.crcpress.com/9781138035003

TEXTBOOK · READER

Modern Telecommunications

Basic Principles and Practices

Martin J N Sibley, University of Huddersfield, West Yorkshire, United Kingdom

This is an introductory text that will equip readers with the necessary tools to study telecommunications further. It explains the fundamentals and background behind digital TV, radio, cell phones, and satellites as well as the legacy analogue transmissions. It covers digital modulation and analogue communications as this is something many people still use (VHF FM for example). The book also clearly explains the mathematics and simplifies the process to make it more approachable to students.

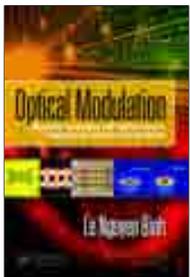
CRC Press

Market: Engineering - Electrical
April 2018: 6-1/8 x 9-1/4: 224pp
Hb: 978-1-138-57882-1: **\$129.95**
eBook: 978-1-351-26360-3

* For full contents and more information, visit: www.crcpress.com/9781138578821

Optical Modulation

Advanced Techniques and Applications in Transmission Systems and Networks



Le Nguyen Binh, Huawei Technologies, Munich, Germany
Series: Optics and Photonics

This book aims to present fundamental aspects of optical communication techniques and advanced modulation techniques and extensive applications of optical communications systems and networks employing single-mode optical fibers as the transmission system. New digital techniques such as chromatic dispersion, polarization mode dispersion, nonlinear phase distortion effects, etc. will be discussed. Practical models for practice and understanding the behavior and dynamics of the devices and systems will be included.

CRC Press

Market: Engineering - Electrical
November 2017: 7 x 10: 656pp
Hb: 978-1-498-74523-9: **\$189.95**
eBook: 978-1-351-22827-5

* For full contents and more information, visit: www.crcpress.com/9781498745239

Principles of Adaptive Filters

Tokunbo Ogunfunmi, Santa Clara University, California, USA and **Xiaoshu Qian**, Intel Corp, Santa Clara, California, USA

A thorough introduction to adaptive filters and/or adaptive signal processing algorithms, this book describes four prototype applications of the adaptive filters, linear prediction, system identification, inverse modeling, and interference cancellation. The book focuses on equalizer design and adaptive beamforming in digital communication as well as linear predictive coding and system identification in digital signal processing. It also takes a historical view of each of the topics covered so readers have the required appreciation for how the material has developed over the years.

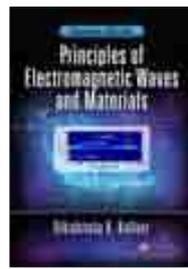
CRC Press

July 2018: 6-1/8 x 9-1/4: 350pp
Hb: 978-1-466-57163-1: **\$119.95**
eBook: 978-1-466-57165-5

* For full contents and more information, visit: www.crcpress.com/9781466571631

2nd Edition · TEXTBOOK · READER

Principles of Electromagnetic Waves and Materials, Second Edition



Dikshitulu K. Kalluri, University of Massachusetts, Lowell, USA

This book focuses primarily on senior undergraduates and graduates in Electromagnetics Waves and Materials courses. The book takes an integrative approach to the subject of electromagnetics by supplementing quintessential "old school" information and methods with instruction in the use of new commercial software such as MATLAB.

CRC Press

Market: Engineering - Electrical
December 2017: 7 x 10: 652pp
Hb: 978-1-498-73329-8: **\$129.95**
eBook: 978-1-498-73331-1
Prev. Ed Hb: 978-1-466-59372-5

* For full contents and more information, visit: www.crcpress.com/9781498733298

2nd Edition · NEW EDITION

Smart CMOS Image Sensors and Applications, Second Edition

Jun Ohta, Nara Institute of Science and Technology, Ikoma, Japan

Series: Optical Science and Engineering

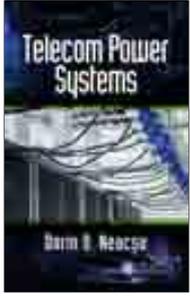
This book provides the state-of-the-art of CMOS image sensors and applications. The book describes the fundamentals of CMOS image sensors, optoelectronic device physics, and introduces typical CMOS image sensor structures, such as an active pixel sensor (APS). Functions and materials of smart CMOS image sensors and present examples of smart imaging are included. Various applications of smart CMOS image sensors are discussed. Several appendices supply a range of information on constants, illuminance, MOSFET characteristics, and optical resolution will be included. Expansion of smart materials, smart imaging and applications including biotechnology and optical wireless communication.

CRC Press

Market: Engineering - Electrical
August 2018: 6-1/8 x 9-1/4: 330pp
Hb: 978-1-498-76464-3: **\$169.95**
eBook: 978-1-498-76465-0
Prev. Ed Hb: 978-0-849-33681-2

* For full contents and more information, visit: www.crcpress.com/9781498764643

Telecom Power Systems



Dorin O. Neacsu, Woburn, Massachusetts, USA

This book addresses topics specific to the application of power electronics to telecom systems. It follows the power flow from national grid down to the last low-voltage high current requirement of a processor. Auxiliary equipment requirements, such as uninterruptible power supplies, storage energy systems, or charging systems, are explained, along with peculiar classification or suggestions for usage. The presentation of each telecom power system is completed with a large number of practical examples to reinforce new material.

CRC Press

Market: Engineering - Electrical

December 2017: 6-1/8 x 9-1/4: 418pp

Hb: 978-1-138-09930-2: \$129.95

eBook: 978-1-315-10414-0

* For full contents and more information, visit: www.crcpress.com/9781138099302

5th Edition · NEW EDITION

Underwater Acoustic Modeling and Simulation, Fifth Edition

Paul C. Etter, Ocean Scientist, USA

The fifth edition discusses new applications including underwater acoustic networks and channel models, marine-hydrokinetic energy devices, and simulation of anthropogenic sound sources. New material has been added to all chapters, especially in mathematical propagation models and special applications and inverse techniques. It covers trends in applied modeling and new analytical tools for propagation, noise, reverberation, and sonar performance models. The content covering environmental-acoustic data in companion tables and core summary tables has been updated with the latest underwater acoustic propagation, noise, reverberation, and sonar performance models.

CRC Press

Market: Engineering - Electrical

April 2018: 6-1/8 x 9-1/4: 568pp

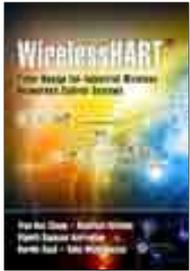
Hb: 978-1-138-05492-9: \$269.95

Prev. Ed Hb: 978-1-466-56493-0

* For full contents and more information, visit: www.crcpress.com/9781138054929

WirelessHART™

Filter Design for Industrial Wireless Networked Control Systems



Tran Duc Chung, Universiti Teknologi Petronas, Perak, Malaysia, Rosdiazli Ibrahim, Universiti Teknologi Petronas, Perak, Malaysia, Vjanth Sagayan Asirvadam, Universiti Teknologi Petronas, Perak, Malaysia, Nordin Saad, Universiti Teknologi Petronas, Perak, Malaysia and Sabo Miya Hassan, Universiti Teknologi Petronas, Perak, Malaysia

This book presents a guideline for EWMA filter design for industrial wireless networked control system, both theoretically and practically. The filter's key advantages are simple, effective, low computational overhead. This book also provides a guideline for practical implementation of EWMA filter for improving networked control performance of various process plants. It

further discusses not only the advantages of the filter, but also the limitations and how to avoid them when implementing the filter from practical point of view.

CRC Press

Market: Engineering - Electrical

November 2017: 6-1/8 x 9-1/4: 178pp

Hb: 978-1-138-29924-5: \$89.95

eBook: 978-1-315-09808-1

* For full contents and more information, visit: www.crcpress.com/9781138299245

Audio and Speech Processing with MATLAB

Paul Hill, University of Bristol, United Kingdom

This book will give the reader a comprehensive overview of contemporary speech and audio processing techniques from perceptual and physical acoustic models to a thorough background in relevant digital signal processing techniques together with an exploration of speech and audio applications. These applications include speech recognition methods, speech codecs and general audio codec development together with a description of associated standards such as MP3, AAC and FLAC.

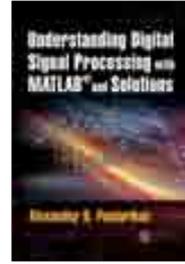
CRC Press

Market: Engineering - Electrical
November 2018: 6-1/8 x 9-1/4: 500pp
Hb: 978-1-498-76274-8: **\$139.95**
eBook: 978-1-498-76275-5

* For full contents and more information, visit: www.crcpress.com/9781498762748

TEXTBOOK - READER

Understanding Digital Signal Processing with MATLAB® and Solutions



Alexander D. Poularikas, The University of Alabama in Huntsville, USA

The book discusses signals that most electrical engineers detect and study. The vast majority of signals could never be detected due to random additive signals, known as noise, that distorts them or completely overshadows them. The text presents the methods for extracting the desired signals from the noise. Each new development includes examples that use MATLAB to provide the answer in graphic forms for the reader's comprehension and understanding.

CRC Press

Market: Engineering - Electrical
November 2017: 7 x 10: 455pp
Hb: 978-1-138-08143-7: **\$139.95**
eBook: 978-1-315-11285-5

* For full contents and more information, visit: www.crcpress.com/9781138081437

Fundamentals of Signal Processing in Metric Spaces with Lattice Properties

Algebraic Approach



Andrey Popoff, Electronic Warfare Research Laboratory at Central Research Institute of Armament and Defence Technologies, Kiev, Ukraine

Signal processing is used in everyday systems: PCs, tablets, smartphones, multicookers, smart home systems, satellite phones, GPS navigators, radios, radars, etc. The focus of the book is interrelation between information theory and signal processing theory. It explores the methodology of constructing the unified mathematical fundamentals of both information theory and signal processing theory, the methods of synthesis of signal processing algorithms under prior uncertainty conditions, and the methods of evaluating their efficiency.

CRC Press

Market: Engineering - Electrical
November 2017: 7 x 10: 418pp
Hb: 978-1-138-09938-8: **\$139.95**
eBook: 978-1-315-10411-9

* For full contents and more information, visit: www.crcpress.com/9781138099388

Sensory Evaluation of Sound

Edited by Nick Zacharov

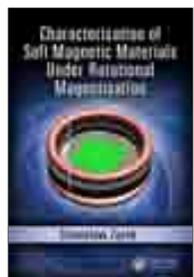
The book provides a detailed review of the latest techniques in sensory evaluation, specifically applied to the evaluation of sound and audio. The material spans topics from concert hall acoustics to the latest applications in audiology and hearing aid design, via the fields of mobile telecommunications and product sound quality. Aimed at the engineer, researcher, manager, and student, the book gives insight into the advanced methods for the sensory evaluation of sound. Additionally, it provides a grounding of basic methodologies and associated statistical analysis methods and illustrates the use of these methods in a number of real world domains, with concrete case studies.

CRC Press

Market: Engineering - Electrical
August 2018: 7 x 10: 504pp
Hb: 978-1-498-75136-0: **\$119.95**
eBook: 978-1-498-75138-4

* For full contents and more information, visit: www.crcpress.com/9781498751360

Characterisation of Soft Magnetic Materials Under Rotational Magnetisation



Stanislaw Zurek

The book presents all practical aspects related to the measurement of rotational power loss in soft magnetic materials. The book focuses on practical aspects of performing such measurements, the associated difficulties, as well as solutions to the most common problems. There are many modes of excitation (1D, 2D and 3D) as well as other parameters which are also researched in connection to rotational power loss, such as Barkhausen noise, magnetostriction, and domain observation.

CRC Press

Market: Engineering - Electrical
November 2017: 6-1/8 x 9-1/4: 568pp
Hb: 978-1-138-30436-9: **\$179.95**
eBook: 978-0-203-73012-6

* For full contents and more information, visit: www.crcpress.com/9781138304369

Finite Elements-based Optimization

Electromagnetic Product Design and Nondestructive Evaluation

S. Ratnajeevan H. Hoole, Electrical and Computer Engineering Department, Michigan State University, East Lansing, USA

Present book is intended to be a cookbook for students and researchers to understand the finite element method and optimization

methods and couple them to effect shape optimization. The optimization part of the book will survey optimization methods and

focus on the genetic algorithm and Powell's method for implementation in the codes. It will contain pseudo-code for the relevant

algorithms and homework problems to reinforce the theory to compile finite element program capable of shape optimization.

CRC Press

Market: Engineering - Electrical
September 2018: 6-1/8 x 9-1/4: 368pp
Hb: 978-1-498-75946-5: **\$189.95**
eBook: 978-1-498-75947-2

* For full contents and more information, visit: www.crcpress.com/9781498759465

3rd Edition · NEW EDITION

Introduction to PCM Telemetry Systems, Third Edition



Stephen Horan, New Mexico State University

Introduction to PCM Telemetry Systems, Third Edition summarizes the techniques and terminology used in sending data and control information between users and the instruments that collect and process the data. Fully revised, it gives introductions to the relevant topics in three primary areas: system interfaces; data transport, timing, and synchronization; and data transmission techniques. Integrating information about the process at all levels from the user interface down to the transmission channel, this will also include how designers apply relevant industry and government standards at each level in this process. Homework problems are included at the end of each chapter.

CRC Press

Market: Engineering - Electrical
October 2017: 6-1/8 x 9-1/4: 657pp
Hb: 978-1-138-19670-4: **\$179.95**
Pb: 978-1-138-74693-0: **\$94.95**
eBook: 978-1-315-29849-8

* For full contents and more information, visit: www.crcpress.com/9781138196704

Magnetic Sensors and Devices

Technologies and Applications



Edited by Laurent A. Francis, Université catholique de Louvain - ICTEAM Institute, Belgium and Kirill Poletkin, Karlsruhe Institute of Technology, Germany

Series: Devices, Circuits, and Systems

This book covers magnetic sensors, which are used to measure magnetic fields. It is divided into three sections: devices and technology for magnetic sensing, industrial applications (automotive, navigation), and emerging applications. Topics include transmission speed sensor ICs, dynamic differential Hall ICs, chopped Hall switches, programmable linear output Hall sensors, low power Hall ICs, self-calibrating differential Hall ICs for wheel speed sensing, dynamic differential Hall ICs, uni- and bipolar Hall IC switches, and chopped mono cell Hall ICs.

CRC Press

Market: Engineering - Electrical
October 2017: 6-1/8 x 9-1/4: 257pp
Hb: 978-1-498-71097-8: **\$149.95**
eBook: 978-1-315-11959-5

* For full contents and more information, visit: www.crcpress.com/9781498710978

MATLAB-based Finite Element Programming in Electromagnetic Modeling

Özlem Özgün, Hacettepe University, Ankara, Turkey and Mustafa Kuzuoglu, Middle East Technical University, Ankara, Turkey

This book focuses on finite element methods with emphasis on MATLAB for numerical modeling of electromagnetic problems. Providing readers with knowledge and skills thorough which they can develop their own finite element codes for practical applications, this book also gives beginning researchers an understanding of finite element programming in the context of certain canonical electromagnetic problems. Through the inclusion of step-by-step MATLAB programs with detailed descriptions, readers will be able to modify, adapt, and apply the provided programs and formulations as to other similar programs through various open-ended questions and exercises.

CRC Press

Market: Engineering - Electrical
October 2018: 7 x 10: 300pp
Hb: 978-1-498-78407-8: **\$139.95**
eBook: 978-1-498-78408-5

* For full contents and more information, visit: www.crcpress.com/9781498784078

Novel Wearable Antennas for Communication and Medical Systems



Albert Sabban, ORT Braude College, Karmiel, Israel

Novel Wearable Antennas discusses the technology to develop compact, efficient, wearable antennas. Elementary electromagnetics and communication basic theory is provided to assist those who do not have a background in basic design, principles, and features of antennas, printed antennas, and wearable antennas. Details of mathematics and explanations are provided as well as new topics and design methods in the area of wearable antennas, RF measurement techniques and measured results in the vicinity of the human body, setups, and design considerations are presented for the first time. HFSS and ADS 3D full-wave electromagnetics software are used in antenna development and analysis.

CRC Press

Market: Engineering - Electrical
October 2017: 6-1/8 x 9-1/4: 420pp
Hb: 978-1-138-04790-7: **\$189.95**
eBook: 978-1-315-11280-0

* For full contents and more information, visit: www.crcpress.com/9781138047907

2nd Edition · NEW EDITION

Protective Relay Principles, Second Edition

Anthony M. Sleva, Sleva Associates, Hillsboro, Oregon, USA

Ideal for new engineers to use as a tutorial before they open the instruction manuals that accompany multi-function microprocessor-based relays, it guides readers through the transient loading conditions that can result in relay misoperation. Elaborating on concepts that are not generally discussed, readers will come away with an excellent grasp of important design considerations for working with overcurrent, over- and undervoltage, impedance, distance, and differential type relay functions, either individually or in combination. Also useful for students as a textbook, this book includes practical examples for many applications, and offers guidance for more unusual ones.

CRC Press

Market: Engineering - Electrical
 October 2018: 6-1/8 x 9-1/4: 425pp
 Hb: 978-1-498-77146-7: \$139.95
 eBook: 978-1-498-77147-4
 Prev. Ed Hb: 978-0-824-75372-6

* For full contents and more information, visit: www.crcpress.com/9781498771467

TEXTBOOK · READER

Theory of Waveguides and Transmission Lines

Edward F. Kuester, University of Colorado Boulder, USA

This book provides the principles of operation of electromagnetic waveguides and transmission lines. The approach is divided between mathematical descriptions of basic behaviors and treatment of specific types of waveguide structures. Classic transmission lines, their basic properties, their connection to lumped-element networks, and the distortion of pulses are discussed followed by a full field analysis of waveguide modes. Modes of specific kinds of waveguides - traditional hollow metallic waveguides, dielectric (including optical) waveguides, etc. are discussed. Problems of excitation and scattering of waveguide modes are addressed followed by real systems and performance.

CRC Press

Market: Engineering - Electrical
 August 2018: 7 x 10: 704pp
 Hb: 978-1-498-73087-7: \$149.95
 eBook: 978-1-498-73089-1

* For full contents and more information, visit: www.crcpress.com/9781498730877

Mechatronic Systems and Process Automation

Model-Driven Approach and Practical Design Guidelines

Patrick O.J. Kaltjob, Ecole Nationale Supérieure Polytechnique, Cameroon

The book discusses the concept of process automation and mechatronic system design, while offering a unified approach and methodology for the modeling, analysis, automation and control, networking, monitoring and sensing of various machines and processes from single electrical-driven machines to large scale industrial process operations. This step-by-step guide covers design applications from various engineering disciplines (mechanical, chemical, electrical, computer, biomedical) through real-life mechatronics problems and industrial automation case studies with topics such as manufacturing, power grid, cement production, wind generator, oil refining, incubator etc.

CRC Press

Market: Engineering - Electrical

April 2018: 6-1/8 x 9-1/4: 462pp

Hb: 978-0-815-37079-6: \$129.95

eBook: 978-1-351-24859-4

* For full contents and more information, visit: www.crcpress.com/9780815370796

3rd Edition - NEW EDITION

Microlithography

Science and Technology, Third Edition

Edited by Bruce W. Smith, Rochester Institute of Technology, New York, USA and Kazuaki Suzuki, Nikon Corporation, Tokyo, Japan

Like the bestselling original, this second edition of Microlithography is a self-contained text detailing both elementary and advanced aspects of submicron microlithography, offering a balanced treatment of theoretical and operating practices. Reflecting recently developed technologies, this edition includes coverage of immersion lithography, extreme ultraviolet (EUV) lithography, imprint lithography, photoresists for 193nm and immersion lithography, and scatterometry. The authors cover mechanical systems, optics, excimer laser light sources, and alignment techniques and analysis, as well as resist chemistry, processing, multilayer lithography, plasma and reactive ion etching, and metrology.

CRC Press

July 2018: 7 x 10: 900pp

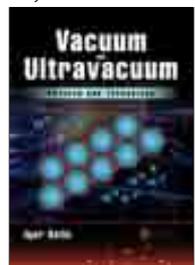
Hb: 978-1-439-87675-6: \$219.95

Prev. Ed Hb: 978-0-824-79024-0

* For full contents and more information, visit: www.crcpress.com/9781439876756

Vacuum and Ultravacuum

Physics and Technology



Igor Bello, Soochow University, Suzhou, Jiangsu, People's Republic of China

The book integrates physics and vacuum technology to facilitate a comprehensive understanding of physical phenomena that form the base knowledge in vacuum production, methodology measurements of vacuum quantities, fundamentals in deposition methods, and material analytical techniques. It includes principles of vacuum technology that are not currently used, but are still presented with the possibility of further development using contemporary technological advancement, including computers and modern digital electronics. The book aims to clarify the interpretation of physical phenomena and quantities,

and each of the presented topics is approached from a strong theoretical background.

CRC Press

Market: Engineering - Electrical

November 2017: 7 x 10: 1036pp

Hb: 978-1-498-78204-3: \$169.95

eBook: 978-1-498-78205-0

* For full contents and more information, visit: www.crcpress.com/9781498782043

3rd Edition · TEXTBOOK · READER

Digital Image Processing and Analysis

Applications with MATLAB® and CVIPtools, Third Edition



Scott E Umbaugh, Southern Illinois University, Edwardsville, USA

This textbook takes an engineering approach to image processing and analysis with more added examples and images than the previous edition—providing more material for illustrating the concepts throughout, along with new PowerPoint slides. The application development will be expanded and updated, and the Applications chapter provides step-by-step tutorial examples for this type of development. The book is divided into five major parts: Introduction to Digital Image Processing (DIP); Digital Image Analysis and Computer Vision; Digital Image

Processing and Human Vision; Application Development with the CVIP Matlab Toolbox and CVIPtools; Appendices.

CRC Press

Market: Engineering - Electrical

December 2017: 8-1/2 x 11: 873pp

Hb: 978-1-498-76602-9: **\$139.95**

eBook: 978-1-498-76604-3

Prev. Ed Hb: 978-1-439-80205-2

* For **full contents** and more information, visit: www.crcpress.com/9781498766029

Encyclopedia of Image Processing

Edited by **Phillip A. Laplante**, The Pennsylvania State University, Malvern, USA

This reference is a comprehensive Encyclopedia, written in the style of the Encyclopedia of Software Engineering, and covers all aspects of Computer Science, Engineering, and Technology. Edited by subject area experts, the scope of the work is structured using the ACM Computing Classification System (CCS) first published in 1988, but subsequently updated, most recently in 2012 (Appendix A).

CRC Press

Market: Computer Science & Engineering

August 2018: 8-1/2 x 11

Hb: 978-1-482-24490-8: **\$1200.00**

eBook: 978-1-351-03274-2

* For **full contents** and more information, visit: www.crcpress.com/9781482244908

Image Operators

Image Processing in Python

Jason M. Kinser, George Mason University, Fairfax, VA USA

This book will provide a unified theoretical foundation of image analysis procedures with accompanied Python® computer scripts to precisely describe the steps in image processing applications. Linkage between required scripts and theory through operators will be presented. Readers will be able to quickly write computer code to correctly implement the algorithms. Chapters will contain theories, operator equivalents, examples, Python codes, and exercises. Python® downloads will be available.

CRC Press

Market: Engineering - Electrical

August 2018: 7 x 10: 300pp

Hb: 978-1-498-79618-7: **\$99.95**

* For **full contents** and more information, visit: www.crcpress.com/9781498796187

Condition Monitoring and Faults Diagnosis of Induction Motors

Electrical Signature Analysis

Nordin Saad, Universiti Teknologi Petronas, Perak, Malaysia, **Muhammad Irfan**, Narjan University, Narjan, Saudi Arabia and **Rosdiazli Ibrahim**

This book's purpose is to explore developments in the condition monitoring and diagnostic approach of induction motors using electrical signature analysis of motor currents. It covers issues related to machinery condition monitoring, signal processing and conditioning, instrumentation and measurements, faults for induction motors failures, new trends in condition monitoring, and pays special attention to the fault identification process using motor currents electrical signature analysis. It presents a new non-invasive and non-intrusive condition monitoring system, which has the capability to detect various defects in induction motor at incipient stages within an arbitrary noise conditions.

CRC Press

Market: Engineering - Electrical
August 2018: 6-1/8 x 9-1/4
Hb: 978-0-815-38995-8: \$149.95
eBook: 978-1-351-17256-1

* For full contents and more information, visit: www.crcpress.com/9780815389958

Discrete-Time Recurrent Neural Control

Analysis and Application

Edgar N. Sánchez, Advanced Studies and Research Center of the National Polytechnic Institute (CINVESTAV-IPN), Guadalajara, Mexico

Series: Automation and Control Engineering

The book presents recent advances in the theory of neural control for discrete-time nonlinear systems with multiple inputs and multiple outputs. The results that appear in each chapter include rigorous mathematical analyses, based on the Lyapunov approach, to establish its properties; in addition, for each chapter, simulation results are included to verify the successful performance of the corresponding proposed schemes. It provides solutions for the output trajectory tracking problem of unknown nonlinear systems based on sliding modes and inverse optimal control scheme.

CRC Press

Market: Engineering - Electrical
June 2018: 6-1/8 x 9-1/4: 260pp
Hb: 978-1-138-55020-9: \$159.95
eBook: 978-1-315-14718-5

* For full contents and more information, visit: www.crcpress.com/9781138550209

Distributed Real-Time Architecture for Mixed-Criticality Systems

Edited by **Hamidreza Ahmadian**, University of Siegen, Germany, **Roman Obermaisser** and **Jon Perez**, IK4-IKERLAN, Ikerlan, Spain

The book describes the achievements of the DREAMS project. The aim of this European project is to achieve security, safety, real-time performance in systems, in which different safety requirements are demanded (e.g., airplanes, hospital equipment). The book introduces the basic terms and concepts of mixed-criticality and real-time embedded systems. The core part of the book is to present different technologies that are demanded to realize such systems and at the end, it is shown, how the introduced technologies can come into handy in three different application domains (avionics, wind-power and health-care).

CRC Press

Market: Engineering - Electrical
November 2018: 6-1/8 x 9-1/4
Hb: 978-0-815-36064-3: \$149.95

* For full contents and more information, visit: www.crcpress.com/9780815360643

Induction Motor Drives

Principles, Control, and Implementation

Chandan Chakraborty, Indian Institute of Technology, Kharagpur and **Suman Maiti**, Indian Institute of Technology, Kharagpur

Series: Power Electronics and Applications Series

With an emphasis on real-life experimentation, this book introduces the principles of operation and the implementation of controllers for induction motor drives through both simulation and experimental results. The book deals with some common and important topics associated with induction motor drives, and it introduces basic types of controllers by implementing them in actual experimentation. The goal of the text is to help the user test a controller for induction motor drives using a Simulink® model, then quickly develop a prototype and validate the simulation results through experimentation with the prototype. The material also includes accompanying MATLAB® models.

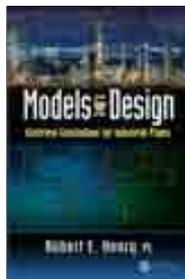
CRC Press

August 2018: 6-1/8 x 9-1/4: 475pp
Hb: 978-1-439-81835-0: \$169.95
eBook: 978-1-439-81836-7

* For full contents and more information, visit: www.crcpress.com/9781439818350

Models for Design

Electrical Calculations for Industrial Plants



Robert E. Henry PE, R. E. Henry PE, LLC, Richmond, TX

This book instructs the reader on how to size a network's equipment and address requirements for fast-transient loads (kiloampere loads that last for several minutes). It explores specific calculations used to design equipment for plants. The chapters discuss economic design methods and dynamic-load requirements for electrical equipment. New motor thermal models are developed and power-cable thermal models are also covered. Furthermore, it presents universal plant-load breakdown.

CRC Press

Market: Engineering - Electrical
November 2017: 6-1/8 x 9-1/4: 165pp
Hb: 978-1-138-50468-4: \$149.95
eBook: 978-1-315-14615-7

* For full contents and more information, visit: www.crcpress.com/9781138504684

Neural Networks for Robotics

An Engineering Perspective

Nancy Arana-Daniel, University of Guadalajara, Guadalajara, Mexico, **Carlos Lopez-Franco**, University of Guadalajara, Guadalajara, Mexico and **Alma Y. Alanis**, University of Guadalajara, Guadalajara, Mexico

The book offers the reader the insight on artificial neural networks for giving a robot a high level of autonomy tasks such as navigation, object recognition, and clustering, with real-time implementations. These methodologies include real-life scenarios to implement a wide range of artificial neural network architectures to solve different kinds of problems encountered in autonomous navigation and object recognition problems. The reader will learn various methodologies that can be used to solve each stage on autonomous navigation for robots, from object recognition, clustering of obstacles, cost mapping of environments, path planning, and vision to low level control.

CRC Press

Market: Engineering - Electrical
August 2018: 6-1/8 x 9-1/4
Hb: 978-0-815-37868-6: \$149.95
eBook: 978-1-351-23179-4

* For full contents and more information, visit: www.crcpress.com/9780815378686

Power Electronic Converters

Interactive Modelling Using Simulink

Narayanaswamy P R Iyer, Consultant, Sydney, NSW, Australia

Provides a step-by-step method for the development of a virtual interactive power electronics laboratory. The book is suitable for undergraduates and graduates for their laboratory course and projects in power electronics. It is equally suitable for professional engineers in industry. The reader will learn to develop interactive virtual power electronics laboratory and perform simulations of their new power electronic converter design using Simulink to develop advanced system model, as well as circuit component level model for any given power electronic converter.

CRC Press

Market: Engineering - Electrical

March 2018: 6-1/8 x 9-1/4: 344pp

Hb: 978-0-815-36819-9: **\$139.95**

eBook: 978-1-351-25575-2

* For full contents and more information, visit: www.crcpress.com/9780815368199

Reluctance Electric Machines

Design and Control

Ion Boldea, University Politehnica Timisoara, Romania and Lucian Tutelea, Politehnica University of Timisoara, Romania

Electric energy is paramount in all industries; it is produced with electric machines for more than 98%, and it is used to control motion in industry for increased productivity and energy savings for more than 60%. Reluctance electric motors and generators represent a higher performance and cost technology in electric machines and drives, as they use less or no NdFeB sintered magnets. This book presents the topologies, modeling, performance, design, and control of reluctance synchronous and flux for these higher efficiency and lower cost machines.

CRC Press

Market: Engineering - Electrical

September 2018: 7 x 10: 300pp

Hb: 978-1-498-78233-3: **\$149.95**

eBook: 978-1-498-78234-0

* For full contents and more information, visit: www.crcpress.com/9781498782333

Rubber Cables

Design, Manufacturing and Applications

Sushil Kumar Ganguli, Power Consultant, Naigaon (East), India

This book relates to the design, manufacturing, and application of various types of Natural Rubber and Synthetic Elastomer Insulated Electric Cables. It begins with the early history of Natural Rubber and the stages of development from the state of Guttaparcha, Wax and Bitumen; from detailed manufacturing technology with descriptions of design and processing to insulation materials and their selection with electrical parameters of cables under different conditions. Various types of cables for defense establishments, Nuclear power plants, submarines, Instrumentation and Mining sections, Oil explorations, and Wind power on land and offshore are also discussed.

CRC Press

Market: Engineering - Electrical

October 2018: 6-1/8 x 9-1/4: 248pp

Hb: 978-1-498-78540-2: **\$149.95**

eBook: 978-1-498-78541-9

* For full contents and more information, visit: www.crcpress.com/9781498785402

TEXTBOOK - READER

Switched Reluctance Motor Drives

Fundamentals to Applications

Edited by Berker Bilgin, McMaster University, Hamilton, ON, Canada and Ali Emadi, McMaster University, Hamilton, ON, Canada

This is a comprehensive textbook covering major aspects of switched reluctance motor drives in detail. It also provides a macroscopic view of the use of electric motors in different sectors to explore the role of SRM in industry. Utilizing higher efficiency, lower cost, and robust electric motors will increase the level of electrification in industry, improve overall system efficiency, and reduce the operational cost, the electricity consumption, and emissions. This is where switched reluctance machine (SRM) can play a significant role. One of the main advantages of SRM is its low-cost and simple construction, which can provide reliable operation in a harsh environment.

CRC Press

Market: Engineering - Electrical

October 2018: 7 x 10: 800pp

Hb: 978-1-138-30459-8: **\$189.95**

eBook: 978-0-203-72999-1

* For full contents and more information, visit: www.crcpress.com/9781138304598

Big Data Analytics in Future Power Systems

Edited by **Ahmed F. Zobaa**, Brunel University London, United Kingdom and **Trevor J. Bihl**, Air Force Research Laboratory, OH, USA

In recent decades, power system has been taken into account as a major sector for using energy and producing electricity. In a smart grids scenario, a huge number of intelligent devices will be connected with no or almost none human intervention characterizing a machine to machine scenario, which is one of the pillars of the Internet of Things. How will smart grid networks interpret and make a good use of these data to improve their reliability and operation aspects? Electricity theft is a major concern for utilities in both the developed and developing world. This book covers all of these scenarios and causes for concern, as well as relevant applications.

CRC Press

Market: Engineering - Electrical
August 2018: 6-1/8 x 9-1/4: 225pp
Hb: 978-1-138-09588-5: **\$99.95**
eBook: 978-1-315-10549-9

* For full contents and more information, visit: www.crcpress.com/9781138095885

Multiband Non-Invasive Microwave Sensor

Design and Analysis



Brijesh Iyer, Department of Electronics and Telecommunications Engineering, Babasaheb Ambedkar Technological University, Lonere, INDIA and **Nagendra Prasad Pathak**, Department of Electronics & Communication Engineering, Indian Institute of Technology Roorkee, Uttarakhand, India

This monograph focuses on the design, implementation and characterization of a concurrent dual band RF sensor for non-invasive detection of human vital signs. The developed prototype is tested, verified and analyzed for detection of occupancy of human beings in a room as a case study.

CRC Press

Market: Electrical Engineering
April 2018: 6-1/8 x 9-1/4: 168pp
Hb: 978-1-138-30098-9: **\$179.95**
eBook: 978-0-203-73294-6

* For full contents and more information, visit: www.crcpress.com/9781138300989

Continuous and Discrete-Time Systems with MATLAB®

Block Pulse and Related Orthogonal Functions

Anish Deb, Department of Electrical Engineering, Budge Budge Institute of Technology, Maulana Azad University of Technology, Kolkata, INDIA and **Srimanti Roychoudhury**, Department of Electrical Engineering, Budge Budge Institute of Technology, Maulana Azad University of Technology, Kolkata, INDIA

This book covers block pulse and related functions for the analysis and identification of continuous and discrete-time systems. It covers 'functions related to block pulse functions' such as non-optimal block pulse functions, delayed unit step functions, and pulse-width modulated generalized block pulse functions including their applications. It also includes analysis and identification of linear time-invariant systems, scaled system, sampled-data system, and systems with sample-and-hold, along with supporting numerical examples. Various examples along with their MATLAB codes at the end of the book give a practical perspective for readers.

CRC Press

Market: Electrical Engineering

October 2018: 7 x 10: 232pp

Hb: 978-1-138-30322-5: **\$159.95**

eBook: 978-0-203-73129-1

* For full contents and more information, visit: www.crcpress.com/9781138303225

Power Systems Analysis Illustrated with MATLAB and ETAP

Hemchandra Madhusudan Shertukde, University of Hartford, Connecticut, USA

Electrical power is harnessed using several energy sources, including: coal, hydel, nuclear, solar, and wind. Generated power is needed to be transferred over long distances to support load requirements of customers viz: residential, industrial, and commercial. This necessitates proper design and analysis of Power Systems to efficiently control the power flow from one point to the other without delay, disturbance, or interference. Ideal for utility and power system designer professionals and students, this book is richly illustrated with MATLAB and etap (Electrical Transient Analysis Program) to succinctly illustrate concepts throughout, and includes examples, case studies, and problems.

CRC Press

Market: Engineering - Electrical

August 2018: 7 x 10: 500pp

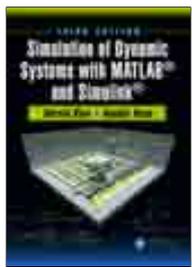
Hb: 978-1-498-79721-4: **\$149.95**

eBook: 978-1-498-79730-6

* For full contents and more information, visit: www.crcpress.com/9781498797214

3rd Edition · TEXTBOOK · READER

Simulation of Dynamic Systems with MATLAB® and Simulink®, Third Edition



Harold Klee, University of Central Florida, Orlando, USA and **Randal Allen**, University of Central Florida, Orlando, USA

Continuous-system simulation is an increasingly important tool for optimizing the performance of real-world systems. The book presents an integrated treatment of continuous simulation with all the background and essential prerequisites in one setting. It features updated chapters and two new sections on Black Swan and the Stochastic Information Packet (SIP) and Stochastic Library Units with Relationships Preserved (SLURP) Standard. The new edition includes basic concepts, mathematical tools, and the common principles of various simulation models for different phenomena, as well as an abundance of case studies, real-world

examples, homework problems, and equations to develop a practical understanding of concepts.

CRC Press

Market: Engineering - Electrical

November 2017: 7 x 10: 832pp

Hb: 978-1-498-78777-2: **\$139.95**

Prev. Ed Hb: 978-1-439-83673-6

* For full contents and more information, visit: www.crcpress.com/9781498787772

Advanced Fiber Laser Techniques

Edited by **Michel J.F. Digonnet**, Stanford University, California, USA

This book discusses the theories and advanced technologies associated with fiber laser and amplifier devices. It includes three brand-new chapters on cutting-edge techniques and discusses Q-switch fiber lasers, principles of mode-locked fiber lasers and applications, high power Yb-doped fiber lasers, visible fluoride fiber lasers, Tm-Doped mode locked fiber lasers at 2 μ m, Ho-doped mode-locked fiber lasers, and 1.3 μ m fiber amplifiers.

CRC Press

Market: Engineering - Electrical

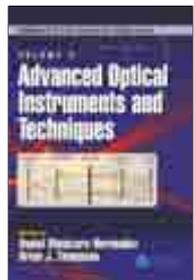
August 2018: 7 x 10: 550pp

Hb: 978-1-498-71736-6: **\$259.95**

eBook: 978-1-498-71737-3

* For full contents and more information, visit: www.crcpress.com/9781498717366

Advanced Optical Instruments and Techniques



Edited by **Daniel Malacara Hernández**, Centro de Investigaciones en Optica, Leon, Mexico

Series: Optical Science and Engineering

Advanced Optical Instruments and Techniques includes twenty-three chapters providing processes, methods, and procedures of cutting-edge optics engineering design and instrumentation. Topics include biomedical instrumentation and basic and advanced interferometry. Optical metrology is discussed, including point and full-field methods. Active and adaptive optics, holography, radiometry, the human eye, and visible light are covered as well as materials, including photonics, nanophotonics, anisotropic materials, and metamaterials.

CRC Press

Market: Engineering - Electrical

November 2017: 7 x 10: 782pp

Hb: 978-1-498-72067-0: **\$259.95**

eBook: 978-1-498-72068-7

* For full contents and more information, visit: www.crcpress.com/9781498720670

TEXTBOOK · READER

Electromagnetism

A Practical Laboratory Course

Maarij Syed, Rose-Hulman Institute of Technology, Avon, IN, USA, **Jerome F. Wagner**, Rose-Hulman Institute of Technology, Terre Haute, IN, USA and **Korey Sorge**, Florida Atlantic University, Boca Raton, FL, USA

This lab manual is a practical, hands-on, experimental text for both undergraduate and graduate students studying electromagnetism. Every experiment is structured with a numerical modeling component to data analysis. A technical connection essay concludes each experiment so students are able to make connections between the principles and the technological applications. The text is designed to be flexible to different curriculums, and every experiment contains tips about the setup and apparatuses being used. A thorough appendix and instructor's manual is included.

CRC Press

August 2018: 6-1/8 x 9-1/4: 275pp

Hb: 978-1-439-88616-8: **\$69.95**

eBook: 978-1-439-88736-3

* For full contents and more information, visit: www.crcpress.com/9781439886168

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Connecting Information and Time, Second Edition



Francis T.S. Yu, Pennsylvania State University, University Park, USA

Series: Optical Science and Engineering

This book shows there is a profound connection between information and entropy. Without this connection, information would be more difficult to apply to science. This book covers the connection and the application to modern optics and radar imaging. It shows that there exists a profound relationship between Einstein's relativity theory and Schrödinger's quantum mechanics, by means of the uncertainty principle. In due of the uncertainty relation, this book shows that every bit of information

takes time and energy to transfer, to create and to observe. The new edition contains 3 new chapters on radar imaging with optics, science in the myth of information, and time and the enigma of space.

CRC Press

Market: Engineering - Electrical

December 2017: 8-1/2 x 11: 196pp

Hb: 978-1-138-55549-5: **\$169.95**

eBook: 978-1-315-14956-1

Prev. Ed Hb: 978-0-824-70363-9

* For full contents and more information, visit: www.crcpress.com/9781138555495

Fundamentals and Basic Optical Instruments



Edited by **Daniel Malacara Hernández**, Centro de Investigaciones en Optica, Leon, Mexico

Series: Optical Science and Engineering

Fundamentals and Basic Optical Instruments includes thirteen chapters providing an introductory guide to the basics of optical engineering, instrumentation, and design. Topics include basic geometric optics, basic wave optics, and basic photon and quantum optics. Paraxial ray tracing, aberrations and optical design, and prisms and refractive optical components are included. Polarization and polarizing optical devices are covered, as well as optical instruments such as telescopes, microscopes, and spectrometers.

CRC Press

Market: Engineering - Electrical

November 2017: 7 x 10: 456pp

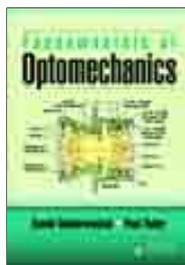
Hb: 978-1-498-72074-8: **\$199.95**

eBook: 978-1-498-72077-9

* For full contents and more information, visit: www.crcpress.com/9781498720748

TEXTBOOK · READER

Fundamentals of Optomechanics



Daniel Vukobratovich, Raytheon Systems, Tucson, Arizona, USA and **Paul Yoder**, Norwalk, Connecticut, USA

Series: Optical Sciences and Applications of Light

This textbook will provide the fundamentals of optomechanics. Starting from the basics, this textbook will lead you through the opto-mechanical design process, discussing materials selection, principles of kinematic design, as well as mounting of windows, individual lenses, and multiple lenses. Techniques for mounting prisms, mirror performance, and design and mounting of mirrors will be included. Written by the two top scientists in the field, this stand-alone, student-friendly textbook has been course-tested and will include homework problems as well as

a solutions manual for adopting professors.

CRC Press

Market: Physics

February 2018: 7 x 10: 460pp

Hb: 978-1-498-77074-3: **\$159.95**

eBook: 978-1-498-77075-0

* For full contents and more information, visit: www.crcpress.com/9781498770743

Fundamentals, Fabrication Techniques and Physical Properties

Edited by **Michel J.F. Digonnet**, Stanford University, California, USA

This book discusses the theories, fabrication techniques, physical properties, operating characteristics, and current technology associated with fiber laser and amplifier devices. Optical properties of rare-earth-doped glasses and rare-earth doped infrared-transmitting glass fibers are described as well as CW Silica Fiber Lasers and broadband fiber sources. Finally, Erbium-Doped Fiber Amplifiers, including basic physics, characteristics, and recent advances are discussed.

CRC Press

Market: Engineering - Electrical

August 2018: 7 x 10: 550pp

Hb: 978-1-498-71729-8: **\$259.95**

eBook: 978-1-498-71731-1

* For full contents and more information, visit: www.crcpress.com/9781498717298

2nd Edition · NEW EDITION

Handbook of Optical Engineering, Second Edition, Two Volume Set



Edited by **Daniel Malacara Hernández**, Centro de Investigaciones en Optica, Leon, Mexico

Series: Optical Science and Engineering

This handbook explains principles, processes, methods, and procedures of optical engineering in a concise and practical way. The second edition contains new chapters on paraxial ray tracing, aberrations and optical design, polarization and polarizing optical devices, microscopes, biomedical instrumentation, and optical methods in metrology. The new edition also includes chapters on active and adaptive optics, non-diffractive Bessel and airy beams, color and colorimetry,

physiological optics and eye aberrations, and photonic materials, nanophotonics, and metamaterials.

CRC Press

Market: Engineering - Electrical

November 2017: 7 x 10: 1238pp

Hb: 978-1-498-72079-3: **\$399.95**

eBook: 978-1-498-72082-3

* For full contents and more information, visit: www.crcpress.com/9781498720793

Introduction to Optical Components

Roshan L. Aggarwal, MIT Lincoln Laboratory and **Kambiz Alavi**, University of Texas at Arlington, Department of Electrical Engineering Nedderman Hall 518

This book describes in detail the following optical components and their applications: lenses, mirrors, diffraction gratings, optical windows, optical filters, beam splitters, light sources, infrared and optical detectors. The book allows the reader to learn about several optical components used in optical system design and evaluation, with emphasis on applications and material selection. While it gives many formulas for design and analysis, it keeps derivations to a minimum.

CRC Press

Market: Engineering - Electrical

March 2018: 6-1/8 x 9-1/4: 180pp

Hb: 978-0-815-39291-0: **\$119.95**

eBook: 978-1-351-18951-4

* For full contents and more information, visit: www.crcpress.com/9780815392910

Light Driven Micromachines

George K. Knopf, The University of Western Ontario, London, Canada and **Kenji Uchino**, The Pennsylvania State University, University Park, USA

Light Driven Micromachines addresses the fundamental characteristics of light activated and optically powered microstructures, simple mechanisms, and complex machines that perform mechanical work at the micro- and nano-scale. It provides a background for how light can initiate physical movement by inducing material or bending or inducing microforces on the surrounding medium. Then, it covers how the forces of light can be harnessed for trapping and manipulating micron-sized mechanical components. Smart materials that exhibit direct optical-to-mechanical energy conversion are examined from the perspective of designing photo-responsive actuators and optically driven systems.

CRC Press

Market: Engineering - Electrical

April 2018: 6-1/8 x 9-1/4: 376pp

Hb: 978-1-498-75769-0: **\$179.95**

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Optical Inspection of Microsystems, Second Edition

Edited by **Wolfgang Osten**, Universität Stuttgart, Germany

This book provides an up-to-date survey of the most important and widely used full-field optical metrology and inspection technologies. Techniques such as interference microscopy, laser Doppler vibrometry, holography, speckle metrology, and spectroscopy are included. In this new edition are also found calibration of optical measurement systems for the inspection of MEMS, numerical tools for the characterization of microelectromechanical systems, deflectometry for the inspection of MEMS, digital holographic microscopy for the inspection of MEMS, and characterization of the dynamics of MEMS.

CRC Press

Market: Engineering - Electrical

September 2018: 7 x 10: 600pp

Hb: 978-1-498-77947-0: **\$269.95**

eBook: 978-1-498-77950-0

Prev. Ed Hb: 978-0-849-33682-9

* For full contents and more information, visit: www.crcpress.com/9781498779470

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Optical Wireless Communications

System and Channel Modelling with MATLAB®, Second Edition

Z. Ghassemlooy, Northumbria University, Newcastle upon Tyne, United Kingdom, **W. Popoola**, The University of Edinburgh, Institute for Digital Communications, School of Engineering, United Kingdom and **S. Rajbhandari**, University of Oxford, Department of Engineering Science, United Kingdom

This book covers the theory and technology of optical wireless communication systems. It includes optical sources, transmitters, detectors, receivers, and other devices used in optical wireless communications. Indoor and outdoor environments are discussed and factors such as channel models, system performance, and mitigation techniques are discussed. Fully revised and updated, this new edition covers important current topics such as visible light, ultraviolet optical wireless communications, and underwater optical wireless communications. Additional optical sources and modulation techniques are included and MATLAB is used throughout.

CRC Press

Market: Electrical - Engineering

October 2018: 7 x 10: 648pp

Hb: 978-1-498-74269-6: **\$199.95**

Prev. Ed Hb: 978-1-439-85188-3

* For full contents and more information, visit: www.crcpress.com/9781498742696

Optics Manufacturing

Components and Systems



Christoph Gerhard, Fraunhofer Application Center for Plasma and Photonics, Goettingen, Germany
Series: Optical Sciences and Applications of Light

This book covers the entire process of manufacturing of optical components and systems. It offers a comprehensive and extensive insight into the methods, principles, and underlying mechanisms/considerations of glass machining, optical fabrication, and design of optics. The basic physics of optical devices will be presented and an overview of the raw material and media used for fabrication of optical components and devices will be included. Both classical and new production processes such as pre-fabrication, shaping, polishing, and assembly are discussed. T

CRC Press

Market: Engineering - Electrical
 December 2017: 6-1/8 x 9-1/4: 309pp
 Hb: 978-1-498-76459-9: **\$159.95**
 eBook: 978-1-351-22836-7

* For full contents and more information, visit: www.crcpress.com/9781498764599

Photonic Crystal Fibres

Telecom and Sensing Applications

Shailendra K. Varshney and **Ravindra K. Sinha**

This book provides a comprehensive review specifically on PCFs including their modeling, fabrication, characterization, and a variety of applications. This comprehensive book encompasses a wide spectrum of PCFs and discusses salient features and important characteristics.

CRC Press

October 2018: 6-1/8 x 9-1/4: 280pp
 Hb: 978-1-466-57237-9: **\$199.95**
 eBook: 978-1-466-57238-6

* For full contents and more information, visit: www.crcpress.com/9781466572379

Polarized Light and Optical Systems

Russell A. Chipman, University of Arizona, Tucson, USA, **Garam Young**, Synopsys, Inc., Pasadena, California, USA and **Wai Sze Tiffany Lam**, University of Arizona, Tucson, USA

Series: Optical Sciences and Applications of Light

Starting from the beginning, this book teaches the fundamentals of polarization along with the advanced information needed for performing and intercepting accurate polarization methods. Developed for the senior undergraduate, graduate, and advanced course of polarization optical design, this carefully thought out and classroom tested text keeps the students in mind. Problem sets, worked examples, case studies, and important mathematical fundamentals are included.

CRC Press

Market: Engineering - Electrical
 June 2018: 7 x 10: 1000pp
 Hb: 978-1-498-70056-6: **\$199.95**
 eBook: 978-1-498-70057-3

* For full contents and more information, visit: www.crcpress.com/9781498700566

Power and Efficiency in Energy Conversion and Storage

Basic Physics and Concepts

Thomas Christen, ABB Switzerland Ltd., Switzerland

This textbook provides the fundamental theoretical concepts of how to describe and optimize devices for energy conversion and storage. Focusing on power-efficiency relations which are the main ingredient for optimization, relations will be derived and discussed for various prototype systems like batteries, electro-motors, heat engines, solar, photodiodes, piezo-electrics, wind turbines etc. In contrast to other books, all models will be constrained to the simplest basics, allowing non-experts and beginners to easily grasp the essentials.

CRC Press

Market: Engineering Environmental
 October 2018: 6-1/8 x 9-1/4: 300pp
 Hb: 978-1-138-62663-8: **\$159.95**

* For full contents and more information, visit: www.crcpress.com/9781138626638

Quantum Mechanics of Charged Particle Beam Optics

Sameen Ahmed Khan and **Ramaswamy Jagannathan**

Series: Multidisciplinary and Applied Optics

Theory of charged particle beam optics is basic to the design and working of charged particle beam devices from electron microscopes to accelerator machines. Traditionally, the optical elements of the devices are designed and operated based on classical mechanics and classical electromagnetism, and only certain specific quantum mechanical aspects are dealt with separately using quantum theory. This book provides a systematic approach to quantum theory of charged particle beam optics, particularly in the high energy cases such as accelerators or high energy electron microscopy.

CRC Press

Market: Engineering - Electrical
 November 2018: 6-1/8 x 9-1/4: 400pp
 Hb: 978-1-138-03592-8: **\$199.95**
 eBook: 978-1-315-23251-5

* For full contents and more information, visit: www.crcpress.com/9781138035928

3rd Edition - NEW EDITION

Rare-Earth-Doped Fiber Lasers and Amplifiers, Third Edition, Two Volume Set

Edited by **Michel J.F. Digonnet**, Stanford University, California, USA

This book covers main fiber lasers and amplifier devices based on rare-earth-doped silica and fluoro-zirconate fibers. It describes the erbium-doped fiber amplifier and its role as foundational in optical communication systems. This new edition is fully revised including new material on visible fluoride fiber lasers, single-frequency fiber lasers, broadband fiber sources, Q-switch fiber lasers, and rare-earth doped infrared-transmitting glass fibers. Three brand new chapters include high-power Yb-doped fiber lasers, Tm-doped mode-locked fiber lasers at 2µm, and Ho-doped mode-locked fiber lasers.

CRC Press

Market: Engineering - Electrical
 August 2018: 7 x 10: 1100pp
 Hb: 978-1-498-71701-4: **\$460.00**
 eBook: 978-1-498-71727-4

* For full contents and more information, visit: www.crcpress.com/9781498717014

Self-Organized Lightwave Networks

Tetsuzo Yoshimura, Tokyo University of Technology, Japan

The SOLNET (self-organized lightwave network) enables self-aligned optical coupling between misaligned optical devices with different core sizes, optical wiring in 3-D free spaces, and targeting lightwaves onto specific objects. These features make fabrication processes of optical networks within systems simpler to reduce the system cost. By reading this book, the readers can learn SOLNETs, their applications, and future challenges systematically. The readers can get hints to reduce the system cost by implementing optical solder and 3-D optical wiring of SOLNET into the systems.

CRC Press

Market: Engineering - Electrical

May 2018: 6-1/8 x 9-1/4: 224pp

Hb: 978-1-498-77979-1: **\$159.95**

Pb: 978-1-138-74688-6: **\$79.95**

* For full contents and more information, visit: www.crcpress.com/9781498779791

Understanding Laser Accidents

Ken Barat, Lawrence Berkeley National Lab, California, USA

Understanding Laser Accidents provides a comprehensive reference addressing the full spectrum of laser accidents. Starting with a fundamental review of biological effects, this book details why laser accidents occur, as well as real-world tips on how to avoid mistakes, preparing for accidents, regulatory response, and responsibilities. Biological effects of laser wavelengths, a critical topic for laser users, and unique properties of ultrafast lasers and tissue damage will be discussed in detail.

CRC Press

Market: Engineering - Electrical

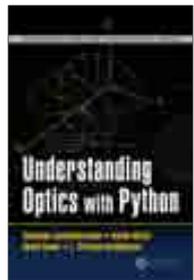
August 2018: 6-1/8 x 9-1/4: 256pp

Hb: 978-1-138-04845-4: **\$139.95**

eBook: 978-1-315-11438-5

* For full contents and more information, visit: www.crcpress.com/9781138048454

Understanding Optics with Python



Vasudevan Lakshminarayanan, University of Waterloo, Ontario, Canada, Hassen Ghalila, University Tunis El Manar, Tunisia, Ahmed Ammar, University Tunis El Manar, Tunisia and L. Srinivasa Varadharajan, L.V. Prasad Eye Institute, Hyderabad, PIN, India

Series: Multidisciplinary and Applied Optics

This book introduces optics through the use of simulations, namely, Python. Students, researchers, and engineers will be able to use Python simulations to better understand the basic concepts of optics and professors will be able to provide immediate visualizations of the complex ideas. Readers will learn programming in Python. Throughout this book, a simulated

laboratory will be provided where students can learn by "hands on" exploration. The text will cover most of the standard topics of traditional optics.

CRC Press

Market: Engineering - Electrical

February 2018: 6-1/8 x 9-1/4: 378pp

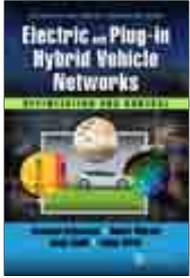
Hb: 978-1-498-75504-7: **\$139.95**

eBook: 978-1-498-75506-1

* For full contents and more information, visit: www.crcpress.com/9781498755047

Electric and Plug-in Hybrid Vehicle Networks

Optimization and Control



Emanuele Crisostomi, University of Pisa, Dept. of Energy, Systems, Territory, and Construction Engineering, Italy, **Robert Shorten**, University College Dublin, Ireland, **Sonja Stüdli** and **Fabian Wirth**, University of Passau, Germany
Series: Automation and Control Engineering

The book explores the behavior of networks of electric and hybrid vehicles. It covers the following topics: energy management issues for aggregates of plug-in vehicles; the design of sharing systems to support electro-mobility; context awareness in the operation of electric and hybrid vehicles, and the role that this plays in a Smart City context; and tools to test and design massively large-scale networks of such vehicles. A

particular focus of the book is on the opportunities afforded by networked actuation possibilities in electric and hybrid vehicles, and the role that such actuation may play in air-quality and emissions management.

CRC Press

Market: Engineering - Electrical
November 2017: 6-1/8 x 9-1/4: 242pp
Hb: 978-1-498-74499-7: **\$129.95**
eBook: 978-1-351-15186-1

* For full contents and more information, visit: www.crcpress.com/9781498744997

Electric Energy Storage Systems for Transportation Electrification

Fundamentals, Concepts, and Applications

Sheldon S. Williamson, International Journal of Energy Research University of Ontario, Oshawa, Canada University of Ontario Institute of Technology, Oshawa, Canada

The main aim of this book is to give a complete and comprehensive introduction to electric storage systems for electric transportation. Emphasis is placed on providing a large number of exercises with different levels of difficulty, so readers can validate their understanding and take a step towards the dimensioning of electric energy storage systems. Especially interesting are the baseline of lectures for specialized undergraduate students or graduate students from different specialties, looking to learn more about electric energy storage systems. Furthermore, the book can be helpful for professionals wanting to learn more about electric energy storage systems.

CRC Press

Market: Engineering - Electrical
November 2018: 6-1/8 x 9-1/4: 400pp
Hb: 978-1-498-75118-6: **\$199.95**
eBook: 978-1-498-75119-3

* For full contents and more information, visit: www.crcpress.com/9781498751186

Energy Harvesting Systems for IoT Applications

Generation, Storage, and Power Management

Yen Kheng Tan, Singapore University of Technology and Design (SUTD), Established In Collaboration with MIT and **Mark Wong**, Applied Res & Technology Center for Infocomm, Singapore

This book reviews the concepts, existing technologies, and design principles necessary for energy harvesting (EH) to be applicable in creating perpetual and infinitely operating wireless sensor nodes (WSN) and sensing devices. With a focus on energy conversion, the text covers new concepts in electronic circuits, novel materials, and recent advancements and developments in low-power electronics. Additionally, the book discusses how these optimized EH-WSN systems can be successfully integrated into real-life deployments/applications.

CRC Press

Market: Engineering - Electrical
August 2018: 6-1/8 x 9-1/4: 600pp
Hb: 978-1-498-71725-0: **\$149.95**
eBook: 978-1-498-71726-7

* For full contents and more information, visit: www.crcpress.com/9781498717250

Harmonic Generation Effects Propagation and Control



J. C. Das, Power System Studies, Inc., Snellville, Georgia, USA
Series: Power Systems Handbook

This book provides coverage of generation, effects, and control of harmonics, including interharmonics and measurements, measurements and estimation of harmonics, harmonic resonance and limitations, according to standards. The concepts of modeling filter designs and harmonic penetrations (propagations) in industrial systems, distribution, and transmission systems are amply covered with the application of SVCs and FACTS controllers. Harmonic analysis in wind and solar generating plants are also discussed. The appendices are devoted to Fourier analysis, pertinent to harmonic analysis, and

solutions to the problems included throughout the book.

CRC Press

Market: Engineering - Electrical
October 2017: 7 x 10: 381pp
Hb: 978-1-498-74546-8: **\$139.95**
eBook: 978-1-351-22830-5

* For full contents and more information, visit: www.crcpress.com/9781498745468

TEXTBOOK - READER

Introduction to Renewable Energy Systems and Applications

Radian Belu, University of Alaska Anchorage, Alaska, USA

Series: Nano and Energy

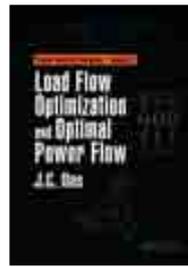
This book covers electric energy from alternative energy sources including solar, wind, hydro, biomass, geothermal, and ocean energy. Core issues discussed include wind and solar resource estimates, characteristics of direct conversion, renewable energy analysis, electromechanical conversion, and storage devices used in alternative energy systems. Power system and smart grid issues associated with integration of renewable energy sources into the electric grid are explored in detail. Readers are encouraged to write their own solutions using the included MATLAB® scripts.

CRC Press

Market: Energy & Clean Technology
November 2018: 6-1/8 x 9-1/4: 450pp
Hb: 978-1-482-25744-1: **\$99.95**
eBook: 978-1-482-25746-5

* For full contents and more information, visit: www.crcpress.com/9781482257441

Load Flow Optimization and Optimal Power Flow



J. C. Das, Power System Studies, Inc., Snellville, Georgia, USA
Series: Power Systems Handbook

This book discusses the major aspects of load flow, optimization, optimal load flow, and culminates in modern heuristic optimization techniques and evolutionary programming. In the deregulated environment, the economic provision of electrical power to consumers requires knowledge of maintaining a certain power quality and load flow. Many case studies and practical examples are included to emphasize real-world applications. The problems at the end of each chapter can be solved by hand calculations without having to use computer software. The appendices are devoted to calculations of line and cable

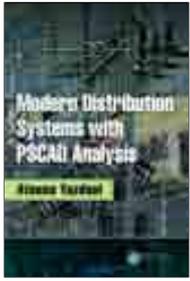
constants, and solutions to the problems are included throughout the book.

CRC Press

Market: Engineering - Electrical
October 2017: 7 x 10: 510pp
Hb: 978-1-498-74544-4: **\$139.95**
eBook: 978-1-351-22829-9

* For full contents and more information, visit: www.crcpress.com/9781498745444

Modern Distribution Systems with PSCAD Analysis



Atousa Yazdani

With the new advancements in distribution systems, such as the integration of renewable energy and bidirectional energy flow, it is necessary to equip power system engineers and students with better tools to study and analyze various phenomenon in distribution system. This book includes sections that address new advancements in distribution systems by discussing possible impacts associated with active distribution systems. It provides a foundation of the parts and equipment that make up a distribution grid, how they work, and how they are designed, maintained, and protected. It highlights experimental modeling and analysis examples, which can be carried out with the software, PSCAD.

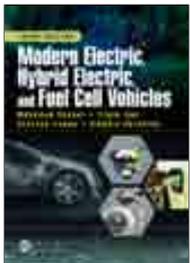
CRC Press

Market: Engineering - Electrical
 March 2018: 6-1/8 x 9-1/4: 120pp
 Hb: 978-1-138-03355-9: \$79.95
 eBook: 978-1-315-30151-8

* For full contents and more information, visit: www.crcpress.com/9781138033559

3rd Edition · TEXTBOOK · NEW EDITION

Modern Electric, Hybrid Electric, and Fuel Cell Vehicles, Third Edition



Mehrdad Ehsani, Texas A&M University, College Station, USA, Yimin Gao, Advanced Vehicle Research Center, Danville, Virginia, USA, Stefano Longo, Cranfield University, UK and Kambiz Ebrahimi

The book deals with the fundamentals, theoretical bases, and design methodologies of conventional internal combustion engine (ICE) vehicles, electric vehicles (Evs), hybrid electric vehicles (HEVs), and fuel cell vehicles (FCVs). The design methodology is described in mathematical terms, step-by-step, and the topics are approached from the overall drive train system, not just individual components. Furthermore, in explaining the design methodology of each drive train, design

examples are presented with simulation results. All the chapters have been updated, and two new chapters on Mild Hybrids and Optimal Sizing and Dimensioning and Control are included.

CRC Press

Market: Engineering - Mechanical
 February 2018: 7 x 10: 522pp
 Hb: 978-1-498-76177-2: \$139.95
 eBook: 978-1-498-76178-9

* For full contents and more information, visit: www.crcpress.com/9781498761772

2nd Edition · TEXTBOOK · READER

Power Electronics

Advanced Conversion Technologies, Second Edition



Fang Lin Luo, AnHui University, China and Nanyang Technological University, Singapore and Hong Ye, Nanyang Technological University, Singapore

Recently, many renewable energy systems, such as solar-panel and wind-turbine energy systems, have used DC/DC converters and DC/AC inverters. By discussing a wide range of converters, readers can find suitable topologies for their applications and even invent new topologies by using suggested methods in the text. This edition features an entirely new chapter on best switching angles to obtain lowest THD for multilevel DC/AC inverters. All other chapters have been updated and include homework problems throughout. With case studies from GE,

AEG, Simpatroll Ltd, and Chinese Power Manufacturing Co., the reader will be exposed to practical applications in industry and real-world settings.

CRC Press

Market: Engineering - Electrical
 December 2017: 7 x 10: 707pp
 Hb: 978-1-138-73532-3: \$149.95
 eBook: 978-1-315-18627-6
 Prev. Ed Hb: 978-1-420-09429-9

* For full contents and more information, visit: www.crcpress.com/9781138735323

Power System Economic and Market Operations



Jin Zhong, The University of Hong Kong, PR of China

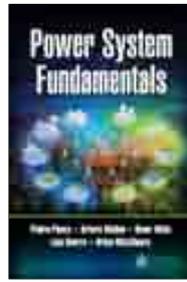
Power system operation is one of the important issues in the power industry. The book aims to provide readers with the methods and algorithms to save the total cost in electricity generation and transmission. It begins with traditional power systems and builds into the fundamentals of power system operation, economic dispatch (ED), optimal power flow (OPF), and unit commitment (UC). The book covers electricity pricing mechanisms, such as nodal pricing and zonal pricing, based on Security-Constrained ED (SCED) or SCUC. The operation of energy market and ancillary service market are also explored.

CRC Press

Market: Engineering - Electrical
 January 2018: 6-1/8 x 9-1/4: 237pp
 Hb: 978-1-482-29904-5: \$139.95
 eBook: 978-1-351-18007-8

* For full contents and more information, visit: www.crcpress.com/9781482299045

Power System Fundamentals



Pedro Ponce, Tecnológico de Monterrey, Mexico City Campus, Mexico, Arturo Molina, Tecnológico de Monterrey, Mexico City Campus, Mexico, Omar Mata, Tecnológico de Monterrey, Mexico City Campus, Mexico, Luis Ibarra, Tecnológico de Monterrey, Mexico City Campus, Mexico and Brian MacCleery, National Instruments, Austin, TX, USA

This book covers the fundamentals of power systems, which are the pillars for smart grids, with a focus on defining the smart grid with theoretical and experimental electrical concepts. It begins by discussing electric circuits, which are the basic systems in smart grids, and finishes with a complete smart grid concept. The book allows the reader to build a foundation of understanding with basic and advanced exercises that run on

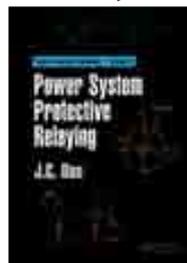
simulation before moving to experimental results. It is intended for readers who want to comprehensively cover both the basic and advanced concepts of smart grids.

CRC Press

Market: Engineering - Electrical
 December 2017: 6-1/8 x 9-1/4: 429pp
 Hb: 978-1-138-55443-6: \$129.95
 eBook: 978-1-315-14899-1

* For full contents and more information, visit: www.crcpress.com/9781138554436

Power System Protective Relaying



J. C. Das, Power System Studies, Inc., Snellville, Georgia, USA
 Series: *Power Systems Handbook*

This book focuses on protective relaying, which is an indispensable part of electrical power systems. The recent advancements in protective relaying are being dictated by MMPPRs (microprocessor-based multifunction relays). The text covers smart grids, integration of wind and solar generation, microgrids, and MMPPRs as the driving aspects of innovations in protective relaying. Topics such as cybersecurity and instrument transformers are also explored. Many case studies and practical examples are included to emphasize real-world applications.

CRC Press

Market: Engineering - Electrical
 October 2017: 7 x 10: 702pp
 Hb: 978-1-498-74550-5: \$139.95
 eBook: 978-1-351-22831-2

* For full contents and more information, visit: www.crcpress.com/9781498745505

Power Systems Handbook - Four Volume Set



J. C. Das, Power System Studies, Inc., Snellville, Georgia, USA

This handbook on power systems consists of a set of 4 volumes. The books are carefully planned and designed to provide state of art material on major aspects of electrical power systems, short-circuit currents, load flow, harmonics and protective relaying. Many aspects of power systems are transparent between different types of studies and analyses; knowledge of short-circuit currents and symmetrical component is required for protective relaying, and fundamental frequency load flow is required for harmonic analysis. The material is organized with sound theoretical base, practical applications, and case studies based on the author's 45+ years of experience with real world

problems.

CRC Press

Market: Engineering - Electrical

November 2017: 7 x 10: 2318pp

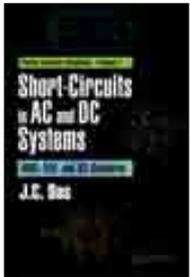
Hb: 978-1-498-74536-9: \$510.00

eBook: 978-1-498-74537-6

* For full contents and more information, visit: www.crcpress.com/9781498745369

Short-Circuits in AC and DC Systems

ANSI, IEEE, and IEC Standards



J. C. Das, Power System Studies, Inc., Snellville, Georgia, USA

Series: Power Systems Handbook

This book provides an understanding of the nature of short-circuit currents, current interruption theories, circuit breaker types, calculations according to ANSI/IEEE and IEC standards, theoretical and practical basis of short-circuit current sources, and the rating structure of switching devices. Short-circuit studies are the initial studies that are conducted for a power system. The book aims to explain the nature of short-circuit currents, the symmetrical components for unsymmetrical faults, and matrix methods of solutions, which are invariably used on digital computers. It includes innovations, worked examples, case studies, and solved problems.

CRC Press

Market: Engineering - Electrical

October 2017: 7 x 10: 725pp

Hb: 978-1-498-74541-3: \$139.95

eBook: 978-1-351-22828-2

* For full contents and more information, visit: www.crcpress.com/9781498745413

TEXTBOOK · READER

Building Electrical Systems and Distribution Networks

An Introduction

Radian Belu, University of Alaska Anchorage, Alaska, USA

Series: Nano and Energy

This introductory book covers all new and conventional aspects of distribution networks and building electrical systems. Problems, mini projects, case studies, and advanced design challenges are included in each chapter, highlighting diverse features of building industrial electrical systems such as power quality and monitoring, grid communication, distributed energy generation, microgrids, power electronics, and intelligent metering and monitoring. Readers are encouraged to write their own solutions while solving the problems, and then refer to the code provided for more complete solutions.

CRC Press

Market: Electrical Engineering
November 2018: 6-1/8 x 9-1/4: 504pp
Hb: 978-1-482-26351-0: **\$139.95**
eBook: 978-1-482-26354-1

* For full contents and more information, visit: www.crcpress.com/9781482263510

2nd Edition · NEW EDITION

Electric Energy Systems: Analysis and Operation, Second Edition

Edited by **Antonio Gomez Exposito**, University of Sevilla, Spain, **Antonio J. Conejo**, University Castilla-La Mancha, Ciudad-Real, Spain and **Claudio Canizares**, University of Waterloo, Ontario, Canada

Series: Electric Power Engineering Series

The book provides an analysis of electric generation and transmission systems that addresses diverse regulatory issues. It includes fundamental background topics, such as load flow, short circuit analysis, and economic dispatch, as well as advanced topics, such as harmonic load flow, state estimation, voltage and frequency control, electromagnetic transients, etc. The new edition features updated material throughout the text and new sections throughout the chapters. It covers current issues in the industry, including renewable generation with associated control and scheduling problems, HVDC transmission, and use of synchrophasors (PMUs).

CRC Press

Market: Engineering - Electrical
July 2018: 7 x 10: 832pp
Hb: 978-1-138-72479-2: **\$149.95**
eBook: 978-1-315-19224-6
Prev. Ed Hb: 978-0-849-37365-7

* For full contents and more information, visit: www.crcpress.com/9781138724792

TEXTBOOK · READER

Electric Power

Distribution Emergency Operation

Chee-Wooi Ten, Michigan Technological University, USA

Provides the fundamentals of distribution emergency operation using graph-theoretic approach and exploration of subsystem(s) that address the operational aspects of fault occurrence to determine the possible feeder reconfiguration. Topics include: (1) Data extraction from geographic information systems (GIS), (2) Graph modeling of distribution feeders, (3) Programming for backward/forward sweeping unbalanced power flow, (4) Short circuit analysis and fault localization, (5) Fault isolation and service restoration, (6) Outage management and crew coordination, (7) Trouble call tickets and escalation to search for fault, and (8) Emerging topics of distribution management systems (DMS).

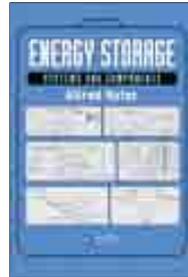
CRC Press

Market: Engineering - Electrical
November 2018: 6-1/8 x 9-1/4: 400pp
Hb: 978-1-498-79894-5: **\$129.95**
eBook: 978-1-498-79895-2

* For full contents and more information, visit: www.crcpress.com/9781498798945

Energy Storage

Systems and Components



Alfred Rufer

This book provides system performances and properties of different energy storage means and is helpful for electrical engineers, students, and other relevant practitioners to understand and design energy storage systems. The book will provide the technical community with solid and detailed knowledge that will help with the development of new solutions and products to address key hot topics of our time, like electric/hybrid vehicles, ultrafast battery charging, smart grids, renewable energy (e.g., solar, wind), peak shaving, and reduction of energy consumption. The book also contains multiple international case studies and a rich set of exercises including their solutions.

CRC Press

Market: Engineering - Electrical
November 2017: 6-1/8 x 9-1/4: 274pp
Hb: 978-1-138-08262-5: **\$149.95**
eBook: 978-1-315-11240-4

* For full contents and more information, visit: www.crcpress.com/9781138082625

Infrastructure Asset Management with Power System Applications

Lina Bertling Tjernberg, KTH Royal Institute of Technology, Stockholm, Sweden

This book is about infrastructure asset management, which can be expressed as the combination of management, financial, economic, and engineering, applied to physical assets with the objective of providing the required level of service in the most cost-effective manner. It includes management of the whole lifecycle of a physical asset from design, construction, commission, operation, maintenance, modification, decommissioning, and disposal. It covers budget issues and focuses on asset management of an infrastructure for energy—i.e., the electric power system.

CRC Press

Market: Engineering - Electrical
April 2018: 6-1/8 x 9-1/4: 544pp
Hb: 978-1-498-70867-8: **\$149.95**
eBook: 978-1-351-05741-7

* For full contents and more information, visit: www.crcpress.com/9781498708678

Power System Protection in Smart Grid Environments

Ramesh Bansal, University of Pretoria, South Africa

Concern for reliable power supply and energy-efficient system design has led to usage of power electronics-based systems including efficient electric power conversion and power semiconductor devices. The proposed book provides integration of complete fundamental theory, design, simulation and application of power electronics and drives covering up-to-date subject components. It contains twenty two chapters arranged in five sections on power semiconductor devices, basic power electronic converters, advanced power electronics converters, power supplies and electrical drives. Each chapter includes simulation examples using MATLAB/Simulink and hardware design and solved and unsolved problems.

CRC Press

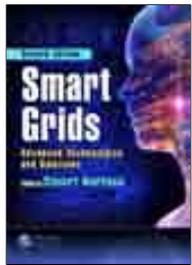
Market: Electrical Engineering
November 2018: 7 x 10: 400pp
Hb: 978-1-138-03241-5: **\$179.95**
eBook: 978-1-138-03258-3

* For full contents and more information, visit: www.crcpress.com/9781138032415

2nd Edition · NEW EDITION

Smart Grids

Advanced Technologies and Solutions, Second Edition

Edited by **Stuart Borlase**, Cary, North Carolina, USA*Series: Electric Power and Energy Engineering*

The book describes the impetus for change in the electric utility industry and discusses the business drivers, benefits, and market outlook of the smart grid initiative. The Second Edition looks at the last five years, with discussions on the evolving barriers and successes with new sections, chapters, and updates. Written by over 100 experts in the field from industry and academia, the reader will understand the achievements and benefits to the utility, consumer, society, and environment, while examining the technical framework of enabling technologies and smart solutions to drive the smart grid effort.

CRC Press

Market: Engineering - Electrical

December 2017: 7 x 10: 805pp

Hb: 978-1-498-79955-3: \$149.95

eBook: 978-1-351-22848-0

* For full contents and more information, visit: www.crcpress.com/9781498799553

2nd Edition · NEW EDITION

AC Motor Control and Electrical Vehicle Applications, Second Edition

Kwang Hee Nam, Postech University, South Korea

This book provides a guide to the control of AC motors with a focus on its application to electric vehicles. It describes the rotation magnetic flux, based on which dynamic equations are derived. Additionally, it discusses the control issues considering the limitations on voltage and current. The latest edition covers current vector control, speed sensorless control, PWM, inverter, loss minimizing control, vehicle dynamics, etc. Various types of electric vehicles, such as battery EV, plug-in EV, and HEV, are also included. More experimental data has been added and additional content has been supplemented with more examples in this updated text.

CRC Press

July 2018: 7 x 10: 425pp

Hb: 978-1-138-71249-2: \$149.95

eBook: 978-1-315-20014-9

Prev. Ed Hb: 978-1-439-81963-0

* For full contents and more information, visit: www.crcpress.com/9781138712492

2nd Edition · NEW EDITION

Practical and Experimental Robotics

Introduction to ROS and SolidWorks, Second Edition

Ferat Sahin, Rochester Institute of Technology, New York, USA and Pushkin Kachroo, University of Nevada, Las Vegas, USA

This edition is a major revision that includes new content on Robot Operating System, CAD Design, 3D Printing, and Microcontrollers. Building a bridge between technicians, who have hands-on experience, and engineers with a deeper insight into the workings, the book covers a range of machines, from arm, wheel, and leg robots to flying robots and robotic submarines and boats. Additionally, a formal introduction to Robot Dynamics for both Mobile and Arm Robots has been added. Unlike most books in this field, this text offers a complete set of topics from electronics, mechanics, and computer interface and programming, making it an independent source for knowledge and understanding of robotics.

CRC Press

Market: Engineering - Electrical

October 2018: 6-1/8 x 9-1/4: 470pp

Hb: 978-1-138-55649-2: \$139.95

eBook: 978-1-315-15009-3

Prev. Ed Hb: 978-1-420-05909-0

* For full contents and more information, visit: www.crcpress.com/9781138556492

Advances in Discrete-Time Sliding Mode Control

Theory and Applications

Ahmadreza Argha, School of Electrical Engineering and Telecommunications, University of New South Wales, Sydney, Australia, Steven Su, School of Elec, Mech and Mechatronic Systems, UTS, Sydney, Li Li, School of Elec, Mech and Mechatronic Systems, UTS, Sydney, Hung Nguyen, Centre for Health Technologies, UTS, Sydney and Branko George Celler, School of Electrical Engineering and Telecommunications, University of New South Wales, Sydney, Australia

In this book, the main focus is on the design of a specific control strategy using digital computers. This control strategy referred to as Sliding Mode Control (SMC) has its roots in (continuous-time) relay control. This book aims to explain recent investigations' output in the field of discrete-time sliding mode control (DSMC). The book starts by explaining a new robust LMI-based (state-feedback and observer-based output-feedback) DSMC including a new scheme for sparsely distributed control. It includes a novel event-driven control mechanism, called actuator-based event-driven scheme, using a synchronized-rate biofeedback system for heart rate regulation during cycle-ergometer.

CRC Press

Market: Electrical Engineering

November 2018: 6-1/8 x 9-1/4: 250pp

Hb: 978-1-138-30027-9: \$159.95

eBook: 978-1-315-13614-1

* For full contents and more information, visit: www.crcpress.com/9781138300279

Distributed Control and Optimization Technologies in Smart Grid Systems



Fanghong Guo, Agency for Science, Technology and Research, Singapore, Changyun Wen and Yong-Duan Song, Chongqing University, China

Series: *Microgrids and Active Power Distribution Networks*

The book equalizes the theoretical involvement with industrial practicality and builds a bridge between academia and industry by reducing mathematical difficulties. It provides an overview of distributed control and distributed optimization theory, followed by industrial applications to smart grid systems, with a special focus on micro grid systems. Each of the chapters is written and organized with an introductory section tailored to provide the essential background of the theories required. It

includes industrial applications to realistic renewable energy systems problems and illustrates the application of proposed toolsets to control and optimization of smart grid systems.

CRC Press

Market: Engineering - Electrical

December 2017: 6-1/8 x 9-1/4: 192pp

Hb: 978-1-138-08859-7: \$149.95

eBook: 978-1-315-10973-2

* For full contents and more information, visit: www.crcpress.com/9781138088597

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Taylor & Francis Group
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Electrical Engineering 2018

