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STOKES HEAVEN

Signal Processing and Information Technology Springer

Modeling of PHOTOVOLTAIC SYSTEMS Using MATLAB® Provides simplified MATLAB® codes for analysis of photovoltaic systems, describes the model of the whole photovoltaic power system, and shows readers how to build these models line by line. This book presents simplified coded models for photovoltaic (PV)-based systems using MATLAB® to help readers understand the dynamic behavior of these systems. Through the use of MATLAB®, the reader has the ability to modify system configuration, parameters, and optimization criteria. Topics covered include energy sources, storage, and power electronic devices. The book contains six chapters that cover systems' components from the solar source to the end user. Chapter 1 discusses modeling of the solar source, and Chapter 2 discusses modeling of the PV source. Chapter 3 focuses on modeling of PV systems' power electronic features and auxiliary power sources. Modeling of PV systems' energy flow is examined in Chapter 4, while Chapter 5 discusses PV systems in electrical power systems. Chapter 6 presents an application of PV system models in systems' size optimization. Common control methodologies applied to these systems are also modeled in this book. Covers the basic models of the whole PV power system, enabling the reader modify the models to provide different sizing and control methodologies Examines auxiliary components to PV systems, including wind turbines, diesel generators, and pumps Contains examples, drills, and codes Modeling of Photovoltaic Systems Using MATLAB®: Simplified Green Codes is a reference for researchers, students, and engineers who work in the field of renewable energy, and specifically in PV systems.

Journal of Scientific and Industrial Research Springer

This book reflects fundamentals to the power system and equips them to recognize and solve the transient problems in power networks and its components. Initially the book represents the basic MATLAB simulink instructions and their applications for power system design. Practicality has been a paramount concern in its preparation. Many pioneers of electrical engineering explored the transient behaviors of the electric circuits. This book effectively helpful for the graduate, post graduate studies and researches on power system transients and emergence & reemergence of the problems in the power system operations and control for new applications with new equipment under transients. I have attempted to set out the fundamental ideas at the beginning of the book and made consistent effort to show thereafter how one peels away the superficial differences in practical transient studies by referring various books, researches, and physical industrial visits.

Control of Industrial Systems CRC Press

This book addresses selected topics in electrical engineering, electronics and mechatronics that have posed serious challenges for both the scientific and engineering communities in recent years. The topics covered range from mathematical models of electrical and electronic components and systems, to simulation tools implemented for their analysis and further developments; and from multidisciplinary optimization, signal processing methods and numerical results, to control and diagnostic techniques. By bridging theory and practice in the modeling, design and optimization of electrical, electromechanical and electronic systems, and by adopting a multidisciplinary perspective, the book provides researchers and practitioners with timely and extensive information on the state of the art in the field — and a source of new, exciting ideas for further developments and collaborations. The book presents selected results of the XIII Scientific Conference on Selected Issues of Electrical Engineering and Electronics (WZEE 2016), held on May 04-08, 2016, in Rzeszów, Poland. The Conference was organized by the Rzeszów Division of Polish Association of Theoretical and Applied Electrical Engineering (PTETIS) in cooperation with the Faculty of Electrical and Computer Engineering of the Rzeszów University of Technology.

Furnace Tapping 2022 Springer Science & Business Media

This book constitutes the refereed proceedings of the 22nd International Conference on Intelligent Data Engineering and Automated Learning, IDEAL 2021, which took place during November 25-27, 2021. The conference was originally planned to take place in Manchester, UK, but was held virtually due to the COVID-19 pandemic. The 61 full papers included in this book were carefully reviewed and selected from 85 submissions. They deal with emerging and challenging topics in intelligent data analytics and associated machine learning paradigms and systems. Special sessions were held on clustering for interpretable machine learning; machine learning towards smarter multimodal systems; and computational intelligence for computer vision and image processing.

Environmental Science and Information Application Technology BoD – Books on Demand

Filling a gap in the literature, *Electrotechnical Systems: Simulation with Simulink® and SimPowerSystems™* explains how to simulate complicated electrical systems more easily using SimPowerSystems™ blocks. It gives a comprehensive overview of the powerful SimPowerSystems toolbox and demonstrates how it can be used to create and investigate models of both classic and modern electrotechnical systems. Build from Circuit Elements and Blocks to System Models Building from simple to more complex topics, the book helps readers better understand the principles, features, and detailed functions of various electrical systems, such as electrical drives, power electronics, and systems for production and distribution of electrical energy. The text begins by describing the models of the main circuit elements, which are used to create the full system model, and the measuring and control blocks. It then examines models of semiconductor devices used in power electronics as well as models of DC and AC motors. The final chapter discusses the simulation of power production and transmission systems, including hydraulic turbine, steam turbine, wind, and diesel generators. The author also develops models of systems that improve the quality of electrical energy, such as active filters and various types of static compensators. Get a Deeper Understanding of Electrical Systems and How to Simulate Them A companion CD supplies nearly 100 models of electrotechnical systems created using SimPowerSystems. These encompass adaptations of SimPowerSystems demonstrational models, as well as models developed by the author, including many important applications related to power electronics and electrical drives, which are not covered by the demonstrational models. In addition to showing how the models can be used, he supplies the theoretical background for each. Offering a solid understanding of how electrical systems function, this book guides readers to use SimPowerSystems to create and investigate electrical systems, including those under development, more effectively.

Modelling and Simulation in Science, Technology and Engineering Mathematics IET

The importance of electric arc furnace steelmaking is evident from the escalated world production seen in steel industry. This book presents systematic and complete details on the current state of

knowledge about metallurgical processes carried out in the electric arc furnace. It includes principles of construction of electric arc furnaces, applied construction solutions, and their operations (together with auxiliary/supportive devices). Modern technologies of melting of various grades steel are detailed, considering the participation of secondary metallurgy including theoretical backgrounds of chemical processes and reactions. It contains theoretical analysis and results of laboratory, model, and industrial tests. Features: Covers the practical aspects of electric arc furnace steelmaking including technological process. Discusses the operation issues of an electric arc furnace in a technical and technological context. Presents a systematic and complete knowledge about relevant construction solutions and metallurgical processes. Includes practical industrial benchmark indicators in the scope of equipment and technology. Analyses practical case studies from industry. This book aims at researchers, professionals and graduate students in Metallurgical Engineering, Materials Science, Electric Power Supply, Environmental Engineering, and Mechanical Engineering. *Applications of Chaos and Nonlinear Dynamics in Engineering* - CRC Press

This volume contains the peer-reviewed proceedings of the International Conference on Modelling and Simulation (MS-17), held in Kolkata, India, 4th-5th November 2017, organized by the Association for the Advancement of Modelling and Simulation Techniques in Enterprises (AMSE, France) in association with the Institution of Engineering Technology (IET, UK), Kolkata Network. The contributions contained here showcase some recent advances in modelling and simulation across various aspects of science and technology. This book brings together articles describing applications of modelling and simulation techniques in fields as diverse as physics, mathematics, electrical engineering, industrial electronics, control, automation, power systems, energy and robotics. It includes a special section on mechanical, fuzzy, optical and opto-electronic control of oscillations. It provides a snapshot of the state of the art in modelling and simulation methods and their applications, and will be of interest to researchers and engineering professionals from industry, academia and research organizations.

Transactions on Computational Collective Intelligence XXIX Springer

The second edition of this must-have reference covers power quality issues in four parts, including new discussions related to renewable energy systems. The first part of the book provides background on causes, effects, standards, and measurements of power quality and harmonics. Once the basics are established the authors move on to harmonic modeling of power systems, including components and apparatus (electric machines). The final part of the book is devoted to power quality mitigation approaches and devices, and the fourth part extends the analysis to power quality solutions for renewable energy systems. Throughout the book worked examples and exercises provide practical applications, and tables, charts, and graphs offer useful data for the modeling and analysis of power quality issues. Provides theoretical and practical insight into power quality problems of electric machines and systems 134 practical application (example) problems with solutions 125 problems at the end of chapters dealing with practical applications 924 references, mostly journal articles and conference papers, as well as national and international standards and guidelines

Intelligent Data Engineering and Automated Learning – IDEAL 2021 Walnut Publication

Chaos and nonlinear dynamics initially developed as a new emergent field with its foundation in physics and applied mathematics. The highly generic, interdisciplinary quality of the insights gained in the last few decades has spawned myriad applications in almost all branches of science and technology—and even well beyond. Wherever quantitative modeling and analysis of complex, nonlinear phenomena is required, chaos theory and its methods can play a key role. This volume concentrates on reviewing the most relevant contemporary applications of chaotic nonlinear systems as they apply to the various cutting-edge branches of engineering. The book covers the theory as applied to robotics, electronic and communication engineering (for example chaos synchronization and cryptography) as well as to civil and mechanical engineering, where its use in damage monitoring and control is explored). Featuring contributions from active and leading research groups, this collection is ideal both as a reference and as a 'recipe book' full of tried and tested, successful engineering applications

Issues in Energy Conversion, Transmission, and Systems: 2011 Edition CRC Press

Scientific and practical studies of raw material issues presents the contribution to the Russian-German raw materials forum. The main theme of the book is problematic issues of subsoil use, whereby the contributions are divided in two main parts: - Exploration, mining and processing, and - Mining services Paying much attention to complex processes in the mining industry, Scientific and practical studies of raw material issues will be of interest to academics and professional involved or interested in Mining Engineering and Earth Sciences.

Manufacturing Science and Technology, ICMST2011 Springer

These transactions publish research in computer-based methods of computational collective intelligence (CCI) and their applications in a wide range of fields such as the semantic Web, social networks, and multi-agent systems. TCCI strives to cover new methodological, theoretical and practical aspects of CCI understood as the form of intelligence that emerges from the collaboration and competition of many individuals (artificial and/or natural). The application of multiple computational intelligence technologies, such as fuzzy systems, evolutionary computation, neural systems, consensus theory, etc., aims to support human and other collective intelligence and to create new forms of CCI in natural and/or artificial systems. This twenty-ninth issue is a regular issue with 10 selected papers.

Introduction to Finite Element Analysis Using MATLAB® and Abaqus CRC Press

The solar Photovoltaic (PV) technology is gaining significant levels and is going to contribute a major share of total generated electricity in the coming years. PV technology is becoming a promising alternative source for fossil fuels. However, Power Quality (PQ) is the major concern that occurs between the grid and an end user. Any typical electrical distribution system exhibits a passive characteristic with respect to power flows when power flows from a substation to load. However, with inclusion of solar PV generators, this behaviour tends to be changed. The main characteristics related to PQ, such as voltage level, frequency, power factor and Total Harmonic Distortion (THD), may be affected. This book presents the analysis of PQ with the integration of grid-connected PV systems as distributed generation. The role of Maximum Power Point Tracking (MPPT) technique is investigated through implementing few basic MPPT techniques. Using the Matlab-simulation platform, the analysis of PQ is demonstrated. This analysis is based on real measurements of THD, Voltage levels, Current levels, DC voltage levels, real power and reactive power flows.

ITJEMAST 10(6) 2019 ScholarlyEditions

Volume is indexed by Thomson Reuters CPCI-S (WoS). The objective of ICMST 2011 was to provide a platform where researchers, engineers, academics and industrial professionals from all over the world could present their research results and discuss developments in Manufacturing Science and Technology. This conference provided opportunities for delegates to exchange new ideas and applications face-to-face, to establish business or research contacts and to find global partners for future collaboration.

Emerging Research in Electronics, Computer Science and Technology Springer

There are some books that target the theory of the finite element, while others focus on the programming side of things. Introduction to Finite Element Analysis Using MATLAB® and Abaqus accomplishes both. This book teaches the first principles of the finite element method. It presents the theory of the finite element method while maintaining a balance between its mathematical formulation, programming implementation, and application using commercial software. The computer implementation is carried out using MATLAB, while the practical applications are carried out in both MATLAB and Abaqus. MATLAB is a high-level language specially designed for dealing with matrices, making it particularly suited for programming the finite element method, while Abaqus is a suite of commercial finite element software. Includes more than 100 tables, photographs, and figures Provides MATLAB codes to generate contour plots for sample results Introduction to Finite Element Analysis Using MATLAB and Abaqus introduces and explains theory in each chapter, and provides corresponding examples. It offers introductory notes and provides matrix structural analysis for trusses, beams, and frames. The book examines the theories of stress and strain and the relationships between them. The author then covers weighted residual methods and finite element approximation and numerical integration. He presents the finite element formulation for plane stress/strain problems, introduces axisymmetric problems, and highlights the theory of plates. The text supplies step-by-step procedures for solving problems with Abaqus interactive and keyword editions. The described procedures are implemented as MATLAB codes and Abaqus files can be found on the CRC Press website.

Soft Computing Applications John Wiley & Sons

This book chapter presents a comprehensive set of MATLAB/Simulink models used to simulate various power quality disturbances. The models presented include distribution line fault, induction motor starting, and transformer energizing that are used to simulate various types of voltage sag event. Capacitor bank switching model used to simulate oscillatory transient event, lightning impulse model used to simulate impulsive transient event, nonlinear load models used to simulate triplen harmonic and voltage notching disturbances generated from the load side, and lastly electric arc furnace model used to simulate flicker disturbance are also presented. This chapter presents each power quality disturbance in MATLAB/Simulink model. The presented models are used to simulate various power quality disturbances and waveforms for power quality analysis research as

well as contribute to the development of power quality education and learning curriculum.

Proceedings of the International Congress on Information and Communication Technology John Wiley & Sons

This book deals with several selected aspects of electric power quality issues typically faced during grid integration processes of contemporary renewable energy sources. In subsequent chapters of this book the reader will be familiarized with the issues related to voltage and current harmonics and inter-harmonics generation and elimination, harmonic emission of switch-mode rectifiers, reactive power flow control in power system with non-linear loads, modeling and simulation of power quality issues in power grid, advanced algorithms used for estimating harmonic components, and new methods of measurement and analysis of real time accessible power quality related data.

Artificial Intelligence Trends in Systems JEC PUBLICATION

This book constitutes the thoroughly refereed post-conference proceedings of the First International Joint Conference on Advances in Signal Processing and Information Technology (SPIT 2011) and Recent Trends in Information Processing and Computing (IPC 2011) held in Amsterdam, The Netherlands, in December 2011. The 50 revised full papers presented were carefully selected from 298 submissions. Conference papers promote research and development activities in computer science, information technology, computational engineering, image and signal processing, and communication.

Power System Transients Springer Nature

International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies publishes a wide spectrum of research and technical articles as well as reviews, experiments, experiences, modelings, simulations, designs, and innovations from engineering, sciences, life sciences, and related disciplines as well as interdisciplinary/cross-disciplinary/multidisciplinary subjects. Original work is required. Article submitted must not be under consideration of other publishers for publications.

POWER SYSTEM ANALYSIS USING MATLAB Trans Tech Publications Ltd

This book presents the proceedings of the International Conference on Emerging Research in Electronics, Computer Science and Technology (ICERECT) organized by PES College of Engineering in Mandya. Featuring cutting-edge, peer-reviewed articles from the field of electronics, computer science and technology, it is a valuable resource for members of the scientific research community. *Advances in Neural Networks - ISNN 2005* Springer

This volume contains 69 papers presented at ICICT 2015: International Congress on Information and Communication Technology. The conference was held during 9th and 10th October, 2015, Udaipur, India and organized by CSI Udaipur Chapter, Division IV, SIG-WNS, SIG-e-Agriculture in association with ACM Udaipur Professional Chapter, The Institution of Engineers (India), Udaipur Local Centre and Mining Engineers Association of India, Rajasthan Udaipur Chapter. This volume contains papers mainly focused on ICT for Managerial Applications, E-governance, IOT and E-Mining.