Noise Theory Of Linear And Nonlinear Circuits

International Workshop on Low-Frequency Propagation and Noise, Woods Hole, Massachusetts, 14-19 October, 1974
Noise theory of linear and nonlinear circuits
The Theory of Noise Suppression by Linear Filters
An Introduction to Information Theory
General Register
Microwave Circuit Design Using Linear and Nonlinear Techniques
Aeroacoustics of Flight Vehicles
Innovation Approach To Random Fields, An: Application Of White Noise Theory
The Linear Theory of Signal-to-noise Ratio in Backward-wave Oscillators
White Noise Distribution Theory
Noise in Nonlinear Dynamical Systems: Volume 1, Theory of Continuous Fokker-Planck Systems
Control of Distributed Parameter and Stochastic Systems
Control Theory for Linear Systems
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A Possible Explanation for the Present Difference Between Linear Noise Theory and Experimental Data for Supersonic Helical Tip Speed Propellers
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White Noise Theory of Prediction, Filtering and Smoothing
Emerging Trends in Vibration and Noise Engineering
VLSI Technology
Noise in Linear and Nonlinear Circuits
Response of Linear Systems of White Noise Inputs
Circuit Theory of Linear Noisy Networks
Noise Theory of Linear and Nonlinear Circuits
Lectures on Discrete Time Filtering
Extensions of Linear-Quadratic Control, Optimization and Matrix Theory
Noise in Nonlinear Dynamical Systems: Volume 1, Theory of Continuous Fokker-Planck Systems
Principles and Applications of Random Noise Theory
Microwave Journal
Topics in the Theory of Random Noise: General theory of random processes. Nonlinear transformations of signals and noise
Partially Observable Linear Systems Under Dependent Noises
Nonlinear Microwave Circuits
The Effects of Small Noise on Implicitly Defined Non-Linear Dynamical Systems
Topics In the Theory of Random Noise
A White Noise Space Approach to Stochastic Processes with Applications in Linear System Theory

Topics in the Theory of Random Noise: Peaks of random functions and the effect of noise on relays nonlinear self-excited oscillations in the presence of noise

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SANTIAGO GAIGE

International Workshop on Low-Frequency Propagation and Noise, Woods Hole, Massachusetts, 14-19 October, 1974 Academic Press
This second edition of Mathematical Methods in the Robust Control of Linear Stochastic Systems includes a large number of recent results in the control of linear stochastic systems. More specifically, the new results presented are: - A unified and abstract framework for Riccati type equations arising in the stochastic control - Stability and control problems for systems perturbed by homogeneous Markov processes with infinite number of states - Mixed H2 / H∞ control problem and numerical procedures - Linear differential equations with positive evolution on ordered Banach spaces with applications for stochastic systems including both multiplicative white noise and Markovian jumps represented by a Markov chain with countable infinite set of states - Kalman filtering for stochastic systems subject both to state dependent noise and Markovian jumps - H∞ reduced order filters for stochastic systems The book will appeal to graduate students, researchers in advanced control engineering, finance, mathematical systems theory, applied probability and stochastic processes, and numerical analysis. From Reviews of the First Edition: This book is concerned with robust control of stochastic systems. One of the main features is its coverage of jump Markovian systems. ... Overall, this book presents results taking into consideration both white noise and Markov chain perturbations. It is clearly written and should be useful for people working in applied mathematics and in control and systems theory. The references cited provide further reading sources. (George Yin, Mathematical Reviews, Issue 2007 m) This book considers linear time varying stochastic systems, subjected to white noise disturbances and system parameter Markovian jumping, in the context of optimal control ... robust stabilization, and disturbance attenuation. ... The material presented in the book is organized in seven chapters. ... The book is very well written and organized. ... is a valuable reference for all researchers and graduate students in applied mathematics and control engineering interested in linear stochastic time varying control systems with Markovian parameter jumping and white noise disturbances. (Zoran Gajic, SIAM Review, Vol. 49 (3), 2007)
Noise theory of linear and nonlinear circuits World Scientific
The ultimate handbook on microwave circuit design with CAD. Full of tips and insights from seasoned industry veterans, Microwave Circuit Design offers practical, proven advice on improving the design quality of microwave passive and active circuits-while cutting costs and time. Covering all levels of microwave circuit design from the elementary to the very advanced, the book systematically presents computer-aided methods for linear and nonlinear designs used in the design and manufacture of microwave amplifiers, oscillators, and mixers. Using the newest CAD tools, the book shows how to design transistor and diode circuits, and also details CAD's usefulness in microwave integrated circuit (MIC) and monolithic microwave integrated circuit (MMIC) technology. Applications of nonlinear SPICE programs, now available for microwave CAD, are described. State-of-the-art coverage includes microwave transistors (HEMTs, MODFETs, MESFETs, HBTs, and more), high-power amplifier design, oscillator design including feedback topologies, phase noise and examples, and more. The techniques presented are illustrated with several MMIC designs, including a wideband amplifier, a low-noise amplifier, and an MMIC mixer. This unique, one-stop handbook also features a major case study of an actual anticollision radar transceiver, which is compared in detail against CAD predictions; examples of actual circuit designs with photographs of completed circuits; and tables of design formulae.
The Theory of Noise Suppression by Linear Filters Allied Publishers
In the mathematical treatment of many problems which arise in physics, economics, engineering, management, etc., the researcher frequently faces two major difficulties: infinite dimensionality and randomness of the evolution process. Infinite dimensionality occurs when the evolution in time of a process is accompanied by a space-like dependence; for example, spatial distribution of the temperature for a heat-conductor, spatial dependence of the time-varying displacement of a membrane subject to external forces, etc. Randomness is intrinsic to the mathematical formulation of many phenomena, such as fluctuation in the stock market, or noise in communication networks. Control theory of distributed parameter systems and stochastic systems focuses on physical phenomena which are governed by partial differential equations, delay-differential equations, integral differential equations, etc., and stochastic differential equations of various types. This has been a fertile field of research with over 40 years of history, which continues to be very active under the thrust of new emerging applications. Among the subjects covered are: Control of distributed parameter systems; Stochastic control; Applications in finance/insurance/manufacturing; Adapted control; Numerical approximation . It is essential reading for applied mathematicians, control theorists, economic/financial analysts and engineers.
An Introduction to Information Theory Springer Science & Business Media
This classic text is an excellent resource and time-saver for engineers who need to tackle troublesome nonlinear components that remain in use despite recent advances in microwave technology. NONLINEAR MICROWAVE CIRCUITS offers detailed, technically substantial coverage of key methods for the analysis, design, and optimization of nonlinear microwave circuits. Using minimal mathematics, it integrates in-depth, "readable" coverage of the underlying theories that guide these methods. This book is replete with valuable "how to" information on a wide range of topics.
General Register Birkhäuser
As their name implies, VLSI systems involve the integration of various component systems. While all of these components systems are rooted in semiconductor manufacturing, they involve a broad range of technologies. This volume of the Principles and Applications of Engineering series examines the technologies associated with VLSI systems, including
Microwave Circuit Design Using Linear and Nonlinear Techniques Cambridge University Press
Noise Theory of Linear and Nonlinear CircuitsWiley-Blackwell
Aeroacoustics of Flight Vehicles CRC Press
Four leaders in the field of microwave circuit design share their newest insights into the latest aspects of the technology The third

edition of Microwave Circuit Design Using Linear and Nonlinear Techniques delivers an insightful and complete analysis of microwave circuit design, from their intrinsic and circuit properties to circuit design techniques for maximizing performance in communication and radar systems. This new edition retains what remains relevant from previous editions of this celebrated book and adds brand-new content on CMOS technology, GaN, SiC, frequency range, and feedback power amplifiers in the millimeter range region. The third edition contains over 200 pages of new material. The distinguished engineers, academics, and authors emphasize the commercial applications in telecommunications and cover all aspects of transistor technology. Software tools for design and microwave circuits are included as an accompaniment to the book. In addition to information about small and large-signal amplifier design and power amplifier design, readers will benefit from the book's treatment of a wide variety of topics, like: An in-depth discussion of the foundations of RF and microwave systems, including Maxwell's equations, applications of the technology, analog and digital requirements, and elementary definitions A treatment of lumped and distributed elements, including a discussion of the parasitic effects on lumped elements Descriptions of active devices, including diodes, microwave transistors, heterojunction bipolar transistors, and microwave FET Two-port networks, including S-Parameters from SPICE analysis and the derivation of transducer power gain Perfect for microwave integrated circuit designers, the third edition of Microwave Circuit Design Using Linear and Nonlinear Techniques also has a place on the bookshelves of electrical engineering researchers and graduate students. It's comprehensive take on all aspects of transistors by world-renowned experts in the field places this book at the vanguard of microwave circuit design research.

Innovation Approach To Random Fields, An: Application Of White Noise Theory Noise Theory of Linear and Nonlinear Circuits

In this book, we study theoretical and practical aspects of computing methods for mathematical modelling of nonlinear systems. A number of computing techniques are considered, such as methods of operator approximation with any given accuracy; operator interpolation techniques including a non-Lagrange interpolation; methods of system representation subject to constraints associated with concepts of causality, memory and stationarity; methods of system representation with an accuracy that is the best within a given class of models; methods of covariance matrix estimation; methods for low-rank matrix approximations; hybrid methods based on a combination of iterative procedures and best operator approximation; and methods for information compression and filtering under condition that a filter model should satisfy restrictions associated with causality and different types of memory. As a result, the book represents a blend of new methods in general computational analysis, and specific, but also generic, techniques for study of systems theory ant its particular branches, such as optimal filtering and information compression. - Best operator approximation, - Non-Lagrange interpolation, - Generic Karhunen-Loeve transform - Generalised low-rank matrix approximation - Optimal data compression - Optimal nonlinear filtering

The Linear Theory of Signal-to-noise Ratio in Backward-wave Oscillators Springer Science & Business Media

Control Theory for Linear Systems deals with the mathematical theory of feedback control of linear systems. It treats a wide range of control synthesis problems for linear state space systems with inputs and outputs. The book provides a treatment of these problems using state space methods, often with a geometric flavour. Its subject matter ranges from controllability and observability, stabilization, disturbance decoupling, and tracking and regulation, to linear quadratic regulation, H2 and H-infinity control, and robust stabilization. Each chapter of the book contains a series of exercises, intended to increase the reader's understanding of the material. Often, these exercises generalize and extend the material treated in the regular text.

White Noise Distribution Theory CRC Press

Vol. 1.

Noise in Nonlinear Dynamical Systems: Volume 1, Theory of Continuous Fokker-Planck Systems Artech House Microwave Library

In two main sections, this volume covers peaks of random functions and the effects of noise on relays and nonlinear self-excited oscillations in the presence of noise. Includes bibliographic references and index.

Control of Distributed Parameter and Stochastic Systems Springer Science & Business Media

Nature is inherently noisy and nonlinear. It is noisy in the sense that all macroscopic systems are subject to the fluctuations of their environments and also to internal fluctuations. It is nonlinear in the sense that the restoring force on a system displaced from equilibrium does not usually vary linearly with the size of the displacement. To calculate the properties of stochastic (noisy) nonlinear systems is in general extremely difficult, although considerable progress has been made in the past. The three volumes that make up Noise in Nonlinear Dynamical Systems comprise a collection of specially written authoritative reviews on all aspects of the subject, representative of all the major practitioners in the field. The first volume deals with the basic theory of stochastic nonlinear systems. It includes an historical overview of the origins of the field, chapters covering some developed theoretical techniques for the study of coloured noise, and the first English-language translation of the landmark 1933 paper by Pontriagin, Andronov and Vitt.

Control Theory for Linear Systems CRC Press

Linear and Non-Linear System Theory focuses on the basics of linear and non-linear systems, optimal control and optimal estimation with an objective to understand the basics of state space approach linear and non-linear systems and its analysis thereof. Divided into eight chapters, materials cover an introduction to the advanced topics in the field of linear and non-linear systems, optimal control and estimation supported by mathematical tools, detailed case studies and numerical and exercise problems. This book is aimed at senior undergraduate and graduate students in electrical, instrumentation, electronics, chemical, control engineering and other allied branches of engineering. Features Covers both linear and non-linear system theory Explores state feedback control and state estimator concepts Discusses non-linear systems and phase plane analysis Includes non-linear system stability and bifurcation behaviour Elaborates optimal control and estimation

Linear and Nonlinear Electron Transport in Solids University of Illinois Press

Noise theory is continuing to gain momentum as a leading topic. Developments in the field are proving increasingly important to the electronics engineer or researcher specialising in communications and microwave engineering. This text provides a comprehensive overview of noise theory in linear and nonlinear

circuits and serves as a practical guide for engineers designing circuits where noise is a significant factor. Features include: A practical approach to the design of noise circuits Graphical representations of noise quantities Definition of all noise quantities for both active and passive circuits Formulae for the conversion of different sets of noise parameters Equations derived for the overall noise parameters of embedded noisy networks Determination of Volterra transfer functions of nonlinear multi-port networks containing multi-dimensional nonlinearities Analysis of noise theory in nonlinear networks based on the multi-port Volterra-series approach Presenting material currently only available in the primary literature, this book serves as an invaluable reference source for advanced students, academics and researchers in the fields of electronics and microwave engineering. The comprehensive coverage will also appeal to communications and microwave engineers in industry.

Some General Results in the Theory of Noise Through Non-linear Devices Wiley-Blackwell

Announcements for the following year included in some vols.

Mathematical Methods in Robust Control of Linear Stochastic Systems CRC Press

A random field is a mathematical model of evolutional fluctuating complex systems parametrized by a multi-dimensional manifold like a curve or a surface. As the parameter varies, the random field carries much information and hence it has complex stochastic structure.The authors of this book use an approach that is characteristic: namely, they first construct innovation, which is the most elemental stochastic process with a basic and simple way of dependence, and then express the given field as a function of the innovation. They therefore establish an infinite-dimensional stochastic calculus, in particular a stochastic variational calculus. The analysis of functions of the innovation is essentially infinite-dimensional. The authors use not only the theory of functional analysis, but also their new tools for the study.

The Mathematical Theory of Communication Springer Science & Business Media

Overcome the effects of noise to push the level of circuit performance with this practical reference. Thoroughly explaining the theory of noise in high-frequency circuits, the book focuses on the real-world problems noise creates. It provides you with a full understanding of methods for analyzing and minimizing noise in linear and nonlinear circuits. The book pays special attention to phase noise in oscillators, offering you a comprehensive and accessible treatment of this critical topic. Additionally, this authoritative volume examines noise in low-noise amplifiers, mixers, and frequency multipliers.

Topics in the Theory of Random Noise: General theory of random processes. Nonlinear transfomations of signals and noise CRC Press

This book discusses the methods of fighting against noise. It can be regarded as a mathematical view of specific engineering problems with known and new methods of control and estimation in noisy media. From the reviews: "An excellent reference on the complete sets of equations for the optimal controls and for the optimal filters under wide band noises and shifted white noises and their possible application to navigation of spacecraft." --

MATHEMATICAL REVIEWS

Cambridge University Press

Scientific knowledge grows at a phenomenal pace--but few books have had as lasting an impact or played as important a role in our modern world as The Mathematical Theory of Communication, published originally as a paper on communication theory more than fifty years ago. Republished in book form shortly thereafter, it has since gone through four hardcover and sixteen paperback printings. It is a revolutionary work, astounding in its foresight and contemporaneity. The University of Illinois Press is pleased and honored to issue this commemorative reprinting of a classic.

A Possible Explanation for the Present Difference Between Linear Noise Theory and Experimental Data for Supersonic Helical Tip Speed Propellers John Wiley & Sons

The dynamics of a large class of non-linear systems are described implicitly, i.e., as a combination of algebraic and differential equations. These dynamics admit of jump behavior. We extend the deterministic theory to a stochastic theory since: (1) the deterministic theory is restrictive; (2) the macroscopic deterministic description of dynamics frequently arises from an aggregation of microscopically fluctuating dynamics; and (3) to robustify the deterministic one in the limit that the intensity of the additive white noise tends to zero. We study the modelling issues involved in applying this stochastic theory to the study of the noise behavior of a multivibrator circuit, discuss the limitations of our methodology for certain classes of systems and present a modified approach for the analysis of sample functions of noisy non-linear circuits.