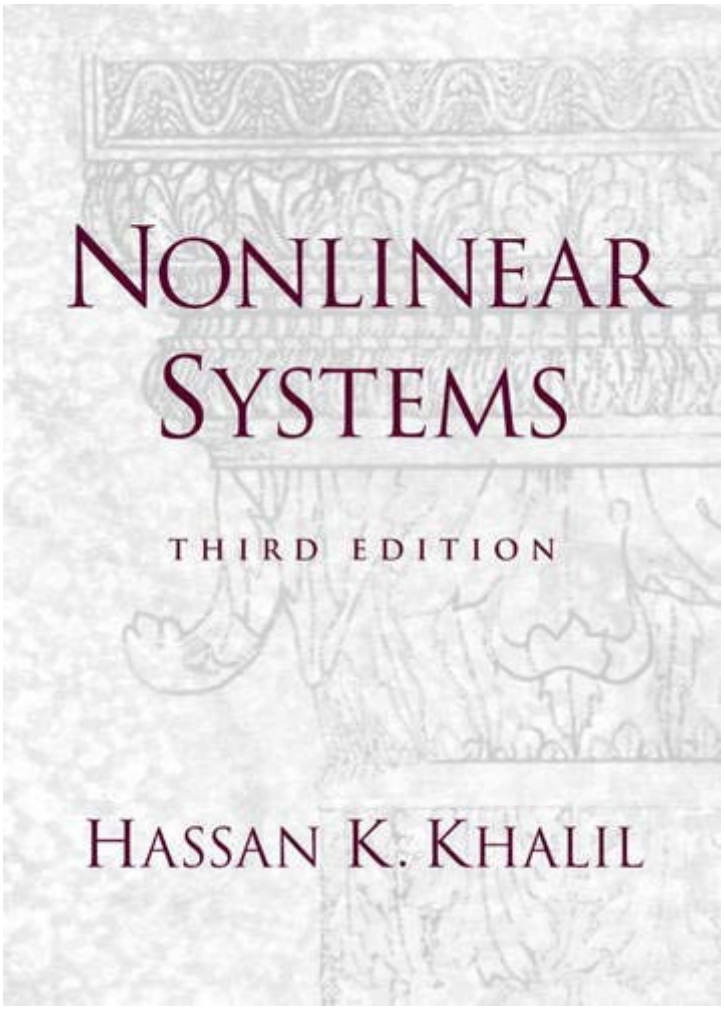

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Nonlinear Systems-Hassan K. Khalil 2013-11-01 For a first-year graduate-level course on nonlinear systems. It may also be used for self-study or reference by engineers and applied mathematicians. The text is written to build the level of mathematical sophistication from chapter to chapter. It has been reorganized into four parts: Basic analysis, Analysis of feedback systems, Advanced analysis, and Nonlinear feedback control.

Nonlinear Systems-Shankar Sastry 2013-04-18 There has been much excitement over the emergence of new mathematical techniques for the analysis and control of nonlinear systems. In addition, great technological advances have bolstered the impact of analytic advances and produced many new problems and applications which are nonlinear in an essential way. This book lays out in a concise mathematical framework the tools and methods of analysis which underlie this diversity of applications.

Chaotic Dynamics of Nonlinear Systems-S. Neil Rasband 2015-08-19 Introduction to the concepts, applications, theory, and technique of chaos. Suitable for advanced undergraduates and graduate students and researchers. Requires familiarity with differential equations and linear vector spaces. 1990 edition.

Nonlinear Systems Stability Analysis-Seyed Kamaleddin Yadavar Nikravesh 2013-01-10 The equations used to describe dynamic properties of physical systems are often nonlinear, and it is rarely possible to find their solutions. Although numerical solutions are impractical and graphical techniques are not useful for many types of systems, there are different theorems and methods that are useful regarding qualitative properties of nonlinear systems and their solutions—system stability being the most crucial property. Without stability, a system will not have value. Nonlinear Systems Stability Analysis: Lyapunov-Based Approach introduces advanced tools for stability analysis of nonlinear systems. It presents the most recent progress in stability analysis and provides a complete review of the dynamic systems stability analysis methods using Lyapunov approaches. The author discusses standard stability techniques, highlighting their shortcomings, and also describes recent developments in stability analysis that can improve applicability of the standard methods. The text covers mostly new topics such as stability of homogonous nonlinear systems and higher order Lyapunov functions derivatives for stability analysis. It also addresses special classes of nonlinear systems including time-delayed and fuzzy systems. Presenting new methods, this book provides a nearly complete set of methods for constructing Lyapunov functions in both autonomous and nonautonomous systems, touching on new topics that open up novel research possibilities. Gathering a body of research into one volume, this text offers information to help engineers design stable systems using practice-oriented methods and can be used for graduate courses in a range of engineering disciplines.

Nonlinear Systems Analysis-M. Vidyasagar 2002-10-01 This text provides a rigorous mathematical analysis of the behavior of nonlinear control systems under a variety of situations.

Discrete-Time Inverse Optimal Control for Nonlinear Systems-Edgar N. Sanchez 2017-12-19 Discrete-Time Inverse Optimal Control for Nonlinear Systems proposes a novel inverse optimal control scheme for stabilization and trajectory tracking of discrete-time nonlinear systems. This avoids the need to solve the associated Hamilton-Jacobi-Bellman equation and minimizes a cost functional, resulting in a more efficient controller. Design More Efficient Controllers for Stabilization and Trajectory Tracking of Discrete-Time Nonlinear Systems The book presents two approaches for controller synthesis: the first based on passivity theory and the second on a control Lyapunov function (CLF). The synthesized discrete-time optimal controller can be directly implemented in real-time systems. The book also proposes the use of recurrent neural networks to model discrete-time nonlinear systems. Combined with the inverse optimal control approach, such models constitute a powerful tool to deal with uncertainties such as unmodeled dynamics and disturbances. Learn from Simulations and an In-Depth Case Study The authors include a variety of simulations to illustrate the effectiveness of the synthesized controllers for stabilization and trajectory tracking of discrete-time nonlinear systems. An in-depth case study applies the control schemes to glycemic control in patients with type 1 diabetes mellitus, to calculate the adequate insulin delivery rate required to prevent hyperglycemia and hypoglycemia levels. The discrete-time optimal and robust control techniques proposed can be used in a range of industrial applications, from aerospace and energy to biomedical and electromechanical systems. Highlighting optimal and efficient control algorithms, this is a valuable resource for researchers, engineers, and students working in nonlinear system control.

Nonlinear Systems in Heat Transfer-Davood Domairry Ganji 2017-09-15 Nonlinear Heat Transfer: Mathematical Modeling and Analytical Methods addresses recent progress and original research in nonlinear science and its application in the area of heat transfer, with a particular focus on the most important advances and challenging applications. The importance of understanding analytical methods for solving linear and nonlinear constitutive equations is essential in studying engineering problems. This book provides a comprehensive range of (partial) differential equations, applied in the field of heat transfer, tackling a comprehensive range of nonlinear mathematical problems in heat radiation, heat conduction, heat convection, heat diffusion and non-Newtonian fluid systems. Providing various innovative analytical techniques and their practical application in nonlinear engineering problems is the unique point of this book. Drawing a balance between theory and practice, the different chapters of the book focus not only on the broader linear and nonlinear problems, but also applied examples of practical solutions by the outlined methodologies. Demonstrates applied mathematical techniques in the engineering applications, especially in nonlinear phenomena Exhibits a complete understanding of analytical methods and nonlinear differential equations in heat transfer Provides the tools to model and interpret applicable methods in heat transfer processes or systems to solve related complexities

Nonlinear Systems- 2018-07-18 This book focuses on several key aspects of nonlinear systems including dynamic modeling, state estimation, and stability analysis. It is intended to provide a wide range of readers in applied mathematics and various engineering disciplines an excellent survey of recent studies of nonlinear systems. With its thirteen chapters, the book brings together important contributions from renowned international researchers to provide an excellent survey of recent studies of nonlinear systems. The first section consists of eight chapters that focus on nonlinear dynamic modeling and analysis techniques, while the next section is composed of five chapters that center on state estimation methods and stability analysis for nonlinear systems.

Nonlinear Systems-P. G. Drazin 1992-06-26 This book introduces the mathematical properties of nonlinear systems, mostly difference and differential equations, as an integrated theory, rather than presenting isolated fashionable topics.

Vibrations of Nonlinear Systems-Efim Natanovich Rozenvasser 1971 Many diverse applied methods of investigating oscillations of nonlinear systems often in different mathematical formulations and outwardly not related to each other have been developed at the present time. The book deals with a systematic examination of several applied problems in the theory of nonlinear oscillations using the method of integral equations. By this approach it proves possible to establish an intimate relationship between small-parameter classical methods and the methods of investigating nonlinear systems of automatic control based on the so-called filter hypothesis, and to give the latter a rigorous foundation. All the results thus obtained are applicable to a broad class of systems described by nonlinear operator equations. The book also considers certain problems of periodic oscillations unrelated to the use of integral equations.

Nonlinear System Identification-Oliver Nelles 2013-03-09 Written from an engineering point of view, this book covers the most common and important approaches for the identification of nonlinear static and dynamic systems. The book also provides the reader with the necessary background on optimization techniques, making it fully self-contained. The new edition includes exercises.

Sliding Mode Control of Multi-input, Multi-output Nonlinear Systems-Jeh-Min Jimmy Chang 1991 A general nonlinear system control problem with the concept of Variable Structure Systems (VSS) is studied. A novel methodology, "Pseudo Sliding Mode Control", is proposed for eliminating the inherent control chatter. The general treatment of the constrained control is discussed using a geometric approach. A mathematical model of the UConn-ROV (Remotely Operated Vehicle) is developed. An application of VSS to the ROV is done by computer simulation.

Nonlinear Control Systems-Zoran Vukic 2003-02-04 This text emphasizes classical methods and presents essential analytical tools and strategies for the construction and development of improved design methods in nonlinear control. It offers engineering procedures for the frequency domain, as well as solved examples for clear understanding of control applications in the industrial, electrical, proce

Nonlinear System Identification-Stephen A. Billings 2013-07-29 Nonlinear System Identification: NARMAX Methods in the Time, Frequency, and Spatio-Temporal Domains describes a comprehensive framework for the identification and analysis of nonlinear dynamic systems in the time, frequency, and spatio-temporal domains. This book is written with an emphasis on making the algorithms accessible so that they can be applied and used in practice. Includes coverage of: The NARMAX (nonlinear autoregressive moving average with exogenous inputs) model The orthogonal least squares algorithm that allows models to be built term by term where the error reduction ratio reveals the percentage contribution of each model term Statistical and qualitative model validation methods that can be applied to any model class Generalised frequency response functions which provide significant insight into nonlinear behaviours A completely new class of filters that can move, split, spread, and focus energy The response spectrum map and the study of sub harmonic and severely nonlinear systems Algorithms that can track rapid time variation in both linear and nonlinear systems The important class of spatio-temporal systems that evolve over both space and time Many case study examples from modelling space weather, through identification of a model of the visual processing system of fruit flies, to tracking causality in EEG data are all included to demonstrate how easily the methods can be applied in practice and to show the insight that the algorithms reveal even for complex systems NARMAX algorithms provide a fundamentally different approach to nonlinear system identification and signal processing for nonlinear systems. NARMAX methods provide models that are transparent, which can easily be analysed, and which can be used to solve real problems. This book is intended for graduates, postgraduates and researchers in the sciences and engineering, and also for users from other fields who have collected data and who wish to identify models to help to understand the dynamics of their systems.

Backstepping Control of Nonlinear Dynamical Systems-Sundarapandian Vaidyanathan 2020-08-15 Backstepping Control of Nonlinear Dynamical Systems addresses both the fundamentals of backstepping control and advances in the field. The latest techniques explored include ‘active backstepping control’, ‘adaptive backstepping control’, ‘fuzzy backstepping control’ and ‘adaptive fuzzy backstepping control’. The reference book provides numerous simulations using MATLAB and circuit design. These illustrate the main results of theory and applications of backstepping control of nonlinear control systems. Backstepping control encompasses varied aspects of mechanical engineering and has many different applications within the field. For example, the book covers aspects related to robot manipulators, aircraft flight control systems, power systems, mechanical systems, biological systems and chaotic systems. This multifaceted view of subject areas means that this useful reference resource will be ideal for a large cross section of the mechanical engineering community. Details the real-world applications of backstepping control Gives an up-to-date insight into the theory, uses and application of backstepping control Bridges the gaps for different fields of engineering, including mechanical engineering, aeronautical engineering, electrical engineering, communications engineering, robotics and biomedical instrumentation

Adaptive Sliding Mode Neural Network Control for Nonlinear Systems-Yang Li 2018-11-16 Adaptive Sliding Mode Neural Network Control for Nonlinear Systems introduces nonlinear systems basic knowledge, analysis and control methods, and applications in various fields. It offers instructive examples and simulations, along with the source codes, and provides the basic architecture of control science and engineering. Introduces nonlinear systems' basic knowledge, analysis and control methods, along with applications in various fields Offers instructive examples and simulations, including source codes Provides the basic architecture of control science and engineering

Active Disturbance Rejection Control for Nonlinear Systems-Bao-Zhu Guo 2017-05-01 A concise, in-depth introduction to active disturbance rejection control theory for nonlinear systems, with numerical simulations and clearly worked out equations Provides the fundamental, theoretical foundation for applications of active disturbance rejection control Features numerical simulations and clearly worked out equations Highlights the advantages of active disturbance rejection control, including small overshooting, fast convergence, and energy savings

Nonlinear Systems and Their Remarkable Mathematical Structures-Norbert Euler 2019-12-06 Nonlinear Systems and Their Remarkable Mathematical Structures, Volume 2 is written in a careful pedagogical manner by experts from the field of nonlinear differential equations and nonlinear dynamical systems (both continuous and discrete). This book aims to clearly illustrate the mathematical theories of nonlinear systems and its progress to both non-experts and active researchers in this area. Just like the first volume, this book is suitable for graduate students in mathematics, applied mathematics and engineering sciences, as well as for researchers in the subject of differential equations and dynamical systems. Features Collects contributions on recent advances in the subject of nonlinear systems Aims to make the advanced mathematical methods accessible to the non-experts Suitable for a broad readership including researchers and graduate students in mathematics and applied mathematics

Nonlinear System Guidance in the Presence of Transmission Zero Dynamics-G. Meyer 1995

Nonlinear Systems-Christos K. Volos 2017 A nonlinear system is a set of nonlinear equations, which may be algebraic, ordinary differential, partial differential, fractional, integral or a combination of these. Especially, nowadays, the term "dynamical system" is used as a synonym of nonlinear systems where the nonlinear equations represent the evolution of a solution over time. So, the notion of dynamical systems arose following the name of equations governing the motion of a system of particles, even though the nonlinear system may have no application to mechanics. Also, from an engineering point of view a nonlinear system may be represented with a feedback loop in which the output of an element is not proportional to its input. Over the last few decades, nonlinear systems have been used to describe a great variety of phenomena, in social and life sciences as well as in physical sciences and engineering. The theory of nonlinear systems has applications to problems of population growth, economics, chemical reactions, celestial mechanics, physiology of nerves, onset of turbulence, regulation of heartbeats, electronic circuits, cryptography, secure communications and many others. Nonlinear dynamical systems, which present chaotic behavior, are of great importance due to their applications in science and engineering. Chaotic systems are nonlinear dynamical systems and maps that are highly sensitive to initial conditions. The sensitivity of initial conditions is usually called the butter'y effect for dynamical systems and maps. So, nowadays the design and analysis of nonlinear systems and especially chaotic systems has gained the interest of the research community due to the fact that many phenomena on financial, physical, biological, chemical, mechanical and engineering systems can be modeled and studied through the perspective of nonlinear dynamics. These nonlinear systems can be modeled by discrete-time or continuous-time mathematical models.This book aims to bridge the gap between the design/analysis and applications, which are the two research stages on the progress of nonlinear systems and also which open up some new directions of real applications, where chaos can be put up to technological use, including secure communication systems, electronic circuits' design, memristors and radar. Finally, this book can serve as an updated and handy reference for university professors, graduate students, laboratory researchers as well as physicists and applied mathematicians who are interested in studying the chaos and its applications through the field of nonlinear systems.

Identification of Nonlinear Systems Using Neural Networks and Polynomial Models-Andrzej Janczak 2004-11-18 This monograph systematically presents the existing identification methods of nonlinear systems using the block-oriented approach It surveys various known approaches to the identification of Wiener and Hammerstein systems which are applicable to both neural network and polynomial models. The book gives a comparative study of their gradient approximation accuracy, computational complexity, and convergence rates and furthermore presents some new and original methods concerning the model parameter adjusting with gradient-based techniques. "Identification of Nonlinear Systems Using Neural Networks and Polynomal Models" is useful for researchers, engineers and graduate students in nonlinear systems and neural network theory.

Nonlinear Systems-A.J. Fossard 2012-12-06 Nonlinear Systems is divided into three volumes. The first deals with modeling and estimation, the second with stability and stabilization and the third with control. This three-volume set provides the most comprehensive and detailed reference available on nonlinear systems. Written by a group of leading experts in the field, drawn from industry, government and academic institutions, it provides a solid theoretical basis on nonlinear control methods as well as practical examples and advice for engineers, teachers and researchers working with nonlinear systems. Each book focuses on the applicability of the concepts introduced and keeps the level of mathematics to a minimum. Simulations and industrial examples drawn from aerospace as well as mechanical, electrical and chemical engineering are given throughout.

Information Theory and Stochastics for Multiscale Nonlinear Systems-Andrew Majda This book introduces mathematicians to the fascinating mathematical interplay between ideas from stochastics and information theory and practical issues in studying complex multiscale nonlinear systems. It emphasizes the serendipity between modern applied mathematics and applications where rigorous analysis, the development of qualitative and/or asymptotic models, and numerical modeling all interact to explain complex phenomena. After a brief introduction to the emerging issues in multiscale modeling, the book has three main chapters. The first chapter is an introduction to information theory with novel applications to statistical mechanics, predictability, and Jupiter's Red Spot for geophysical flows. The second chapter discusses new mathematical issues regarding fluctuation-dissipation theorems for complex nonlinear systems including information flow, various approximations, and illustrates applications to various mathematical models. The third chapter discusses stochastic modeling of complex nonlinear systems. After a general discussion, a new elementary model, motivated by issues in climate dynamics, is utilized to develop a self-contained example of stochastic mode reduction. Based on A. Majda's Aisenstadt lectures at the University of Montreal, the book is appropriate for both pure and applied mathematics graduate students, postdocs and faculty, as well as interested researchers in other scientific disciplines. No background in geophysical flows is required. About the authors: Andrew Majda is a member of the National Academy of Sciences and has received numerous honors and awards, including the National Academy of Science Prize in Applied Mathematics, the John von Neumann Prize of the Society of Industrial and Applied Mathematics, the Gibbs Prize of the American Mathematical Society, and the Medal of the College de France. In the past several years at the Courant Institute, Majda and a multi-disciplinary faculty have created the Center for Atmosphere Ocean Science to promote cross-disciplinary research with modern applied mathematics in climate modeling and prediction. R.V. Abramov is a young researcher; he received his PhD in 2002. M. J. Grote received his Ph.D. under Joseph B. Keller at Stanford University in 1995.

Structural Sensitivity Analysis and Optimization 2-K. K. Choi 2006-12-22 Extensive numerical methods for computing design sensitivity are included in the text for practical application and software development. The numerical method allows integration of CAD-FEA-DSA software tools, so that design optimization can be carried out using CAD geometric models instead of FEA models. This capability allows integration of CAD-CAE-CAM so that optimized designs can be manufactured effectively.

Adaptive Learning Methods for Nonlinear System Modeling-Danilo Comminiello 2018-06-11 Adaptive Learning Methods for Nonlinear System Modeling presents some of the recent advances on adaptive algorithms and machine learning methods designed for nonlinear system modeling and identification. Real-life problems always entail a certain degree of nonlinearity, which makes linear models a non-optimal choice. This book mainly focuses on those methodologies for nonlinear modeling that involve any adaptive learning approaches to process data coming from an unknown nonlinear system. By learning from available data, such methods aim at estimating the nonlinearity introduced by the unknown system. In particular, the methods presented in this book are based on online learning approaches, which process the data example-by-example and allow to model even complex nonlinearities, e.g., showing time-varying and dynamic behaviors. Possible fields of applications of such algorithms includes distributed sensor networks, wireless communications, channel identification, predictive maintenance, wind prediction, network security, vehicular networks, active noise control, information forensics and security, tracking control in mobile robots, power systems, and nonlinear modeling in big data, among many others. This book serves as a crucial resource for researchers, PhD and post-graduate students working in the areas of machine learning, signal processing, adaptive filtering, nonlinear control, system identification, cooperative systems, computational intelligence. This book may be also of interest to the industry market and practitioners working with a wide variety of nonlinear systems. Presents the key trends and future perspectives in the field of nonlinear signal processing and adaptive learning. Introduces novel solutions and improvements over the state-of-the-art methods in the very exciting area of online and adaptive nonlinear identification. Helps readers understand important methods that are effective in nonlinear system modelling, suggesting the right methodology to address particular issues.

Oscillations in Nonlinear Systems-Jack K. Hale 2015-03-24 By focusing on ordinary differential equations that contain a small parameter, this concise graduate-level introduction provides a unified approach for obtaining periodic solutions to nonautonomous and autonomous differential equations. 1963 edition.

Graphical Analysis of Nonlinear Systems-Richard Frank Whitbeck 1964

Stability Analysis of Nonlinear Systems-Vangipuram Lakshmikantham 2015-12-29 The book investigates stability theory in terms of two different measure, exhibiting the advantage of employing families of Lyapunov functions and treats the theory of a variety of inequalities, clearly bringing out the underlying theme. It also demonstrates manifestations of the general Lyapunov method, showing how this technique can be adapted to various apparently diverse nonlinear problems. Furthermore it discusses the application of theoretical results to several different models chosen from real world phenomena, furnishing data that is particularly relevant for practitioners. Stability Analysis of Nonlinear Systems is an invaluable single-sourse reference for industrial and applied mathematicians, statisticians, engineers, researchers in the applied sciences, and graduate students studying differential equations.

Nonlinear Systems Tracking-Lyubomir T. Gruyitch 2018-09-03 Tracking is the goal of control of any object, plant, process, or vehicle. From vehicles and missiles to power plants, tracking is essential to guarantee high-quality behavior. Nonlinear Systems Tracking establishes the tracking theory, trackability theory, and tracking control synthesis for time-varying nonlinear plants and their control systems as parts of control theory. Treating general dynamical and control systems, including subclasses of input-output and state-space nonlinear systems, the book: Describes the crucial tracking control concepts that comprise effective tracking control algorithms Defines the main tracking and trackability properties involved, identifying properties both perfect and imperfect Details the corresponding conditions needed for the controlled plant to exhibit each property Discusses various algorithms for tracking control synthesis, attacking the tracking control synthesis problems themselves Depicts the effective synthesis of the tracking control, under the action of which, the plant behavior satisfies all the imposed tracking requirements resulting from its purpose With clarity and precision, Nonlinear Systems Tracking provides original coverage, presenting discovery and proofs of new tracking criteria and control algorithms. Thus, the book creates new directions for research in control theory, enabling fruitful new control engineering applications.

Nonlinear System Identification for Aeroelastic Systems with Application to Experimental Data-National Aeronaut Administration (Nasa) 2020-08-05 Representation and identification of a nonlinear aeroelastic pitch-plunge system as a model of the Nonlinear AutoRegressive, Moving Average eXogenous (NARMAX) class is considered. A nonlinear difference equation describing this aircraft model is derived theoretically and shown to be of the NARMAX form. Identification methods for NARMAX models are applied to aeroelastic dynamics and its properties demonstrated via continuous-time simulations of experimental conditions. Simulation results show that (1) the outputs of the NARMAX model closely match those generated using continuous-time methods, and (2) NARMAX identification methods applied to aeroelastic dynamics provide accurate

discrete-time parameter estimates. Application of NARMAX identification to experimental pitch-plunge dynamics data gives a high percent fit for cross-validated data. Kukreja, Sunil L. Armstrong Flight Research Center NASA/TM-2008-214641, H-2887 AEROELASTICITY; NONLINEAR SYSTEMS; SYSTEM IDENTIFICATION; PARAMETER IDENTIFICATION; AUTOREGRESSIVE MOVING AVERAGE; DIFFERENCE EQUATIONS; SIMULATION; NONLINEARITY

Practical Sensitivity Reduction Tests for Linear and Nonlinear Systems-École polytechnique (Montréal, Québec). Département de génie électrique (1958-1990). Section automatique 1974

Nonlinear Systems-R. Sahadevan 2002 Nonlinear Systems covers a wide range of topics in nonlinear science, from general nonlinear dynamics, soliton systems, and the solution of nonlinear differential and difference equations to the integrability of discrete nonlinear systems, and classical and quantum chaos. Its chapters reflect the current status of important nonlinear theories in various areas of applied mathematics and mathematical physics and collectively provide a comprehensive picture of new areas and their applications.

Practical Stability of Nonlinear Systems-V. Lakshmikantham 1990 This is the first book that deals with practical stability and its development. It presents a systematic study of the theory of practical stability in terms of two different measures and arbitrary sets and demonstrates the manifestations of general Lyapunov's method by showing how this effective technique can be adapted to investigate various apparently diverse nonlinear problems including control systems and multivalued differential equations.

Intelligent Observer and Control Design for Nonlinear Systems-Dierk Schröder 2013-04-17 This application-oriented monograph focuses on a novel and complex type of control systems. Written on an engineering level, including fundamentals, advanced methods and applications, the book applies techniques originating from new methods such as artificial intelligence, fuzzy logic, neural networks etc.

Vanishing Viscosity Method-Boling Guo 2016-12-05 The book summarizes several mathematical aspects of the vanishing viscosity method and considers its applications in studying dynamical systems such as dissipative systems, hyperbolic conversion systems and nonlinear dispersion systems. Including original research results, the book demonstrates how to use such methods to solve PDEs and is an essential reference for mathematicians, physicists and engineers working in nonlinear science. Contents: Preface Sobolev Space and Preliminaries The Vanishing Viscosity Method of Some Nonlinear Evolution System The Vanishing Viscosity Method of Quasilinear Hyperbolic System Physical Viscosity and Viscosity of Difference Scheme Convergence of Lax–Friedrichs Scheme, Godunov Scheme and Glimm Scheme Electric–Magnetohydrodynamic Equations References

Deterministic Nonlinear Systems-Vadim S. Anishchenko 2014-06-16 This text is a short yet complete course on nonlinear dynamics of deterministic systems. Conceived as a modular set of 15 concise lectures it reflects the many years of teaching experience by the authors. The lectures treat in turn the fundamental aspects of the theory of dynamical systems, aspects of stability and bifurcations, the theory of deterministic chaos and attractor dimensions, as well as the elements of the theory of Poincare recurrences.Particular attention is paid to the analysis of the generation of periodic, quasiperiodic and chaotic self-sustained oscillations and to the issue of synchronization in such systems. This book is aimed at graduate students and non-specialist researchers with a background in physics, applied mathematics and engineering wishing to enter this exciting field of research.

Integrability of Nonlinear Systems-Yvette Kosmann-Schwarzbach 2004-02-17 The lectures that comprise this volume constitute a comprehensive survey of the many and various aspects of integrable dynamical systems. The present edition is a streamlined, revised and updated version of a 1997 set of notes that was published as Lecture Notes in Physics, Volume 495. This volume will be complemented by a companion book dedicated to discrete integrable systems. Both volumes address primarily graduate students and nonspecialist researchers but will also benefit lecturers looking for suitable material for advanced courses and researchers interested in specific topics.

Uniform Output Regulation of Nonlinear Systems-Alexey Victorovich Pavlov 2006-07-27 This study of the nonlinear output regulation problem embraces local as well as global cases, covering such aspects as controller design and practical implementation issues. From the reviews: "The authors treat the problem of output regulation for a nonlinear control system...[they] develop a global approach to output regulation along familiar lines....I found the book to be ambitious and rigorous, tackling some hard conceptual issues." --IEEE TRANSACTIONS ON AUTOMATIC CONTROL

Nonlinear System Theory-Casti 1985-02-21 Nonlinear System Theory

Stable Adaptive Control and Estimation for Nonlinear Systems-Jeffrey T. Spooner 2002-05-24 Includes a solution manual for problems. Provides MATLAB code for examples and solutions. Deals with robust systems in both theory and practice.