

A Shock Fitting Primer Chapman Hallcrc Applied Mathematics Nonlinear Science

An Introduction to Stochastic Modeling provides information pertinent to the standard concepts and methods of stochastic modeling. This book presents the rich diversity of applications of stochastic processes in the sciences. Organized into nine chapters, this book begins with an overview of diverse types of stochastic models, which predicts a set of possible outcomes weighed by their likelihoods or probabilities. This text then provides exercises in the applications of simple stochastic analysis to appropriate problems. Other chapters consider the study of general functions of independent, identically distributed, nonnegative random variables representing the successive intervals between renewals. This book discusses as well the numerous examples of Markov branching processes that arise naturally in various scientific disciplines. The final chapter deals with queueing models, which aid the design process by predicting system performance. This book is a valuable resource for students of engineering and management science. Engineers will also find this book useful.

An Introduction to Partial Differential Equations with MATLAB, Second Edition illustrates the usefulness of PDEs through numerous applications and helps students appreciate the beauty of the underlying mathematics. Updated throughout, this second edition of a bestseller shows students how PDEs can model diverse problems, including the flow of heat,

The modern financial industry has been required to deal with large and diverse portfolios in a variety of asset classes often with limited market data available. Financial Signal Processing and Machine Learning unifies a number of recent advances made in signal processing and machine learning for the design and management of investment portfolios and financial engineering. This book bridges the gap between these disciplines, offering the latest information on key topics including characterizing statistical dependence and correlation in high dimensions, constructing effective and robust risk measures, and their use in portfolio optimization and rebalancing. The book focuses on signal processing approaches to model return, momentum, and mean reversion, addressing theoretical and implementation aspects. It highlights the connections between portfolio theory, sparse learning and compressed sensing, sparse eigen-portfolios, robust optimization, non-Gaussian data-driven risk measures, graphical models, causal analysis through temporal-causal modeling, and large-scale copula-based approaches. Key features: Highlights signal processing and machine learning as key approaches to quantitative finance. Offers advanced mathematical tools for high-dimensional portfolio construction, monitoring, and post-trade analysis problems. Presents portfolio theory, sparse learning and compressed sensing, sparsity methods for investment portfolios. including eigen-portfolios, model return, momentum, mean reversion and non-Gaussian data-driven risk measures with real-world applications of these techniques. Includes contributions from leading researchers and practitioners in both the signal and information processing communities, and the quantitative finance community.

A study of the non-verbal language which exists in every culture, the elaborate patterns of behavior through which we communicate

Clinical Practice Guidelines For Chronic Kidney Disease

Principles of Animal Locomotion

Financial Signal Processing and Machine Learning

British Books in Print

A Handbook and Classification

Classical Techniques, Recent Developments, and Memoirs of Gino Moretti

Optimal Estimation of Dynamic Systems, Second Edition highlights the importance of both physical and numerical modeling in solving dynamics-based estimation problems found in engineering systems. Accessible to engineering students, applied mathematicians, and practicing engineers, the text presents the central concepts and methods of optimal estimation theory and applies the methods to problems with varying degrees of analytical and numerical difficulty. Different approaches are often compared to show their absolute and relative utility. The authors also offer prototype algorithms to stimulate the development and proper use of efficient computer programs. MATLAB® codes for the examples are available on the book's website. New to the Second Edition With more than 100 pages of new material, this reorganized edition expands upon the best-selling original to include comprehensive developments and updates. It incorporates new theoretical results, an entirely new chapter on advanced sequential state estimation, and additional examples and exercises. An ideal self-study guide for practicing engineers as well as senior undergraduate and beginning graduate students, the book introduces the fundamentals of estimation and helps newcomers to understand the relationships between the estimation and modeling of dynamical systems. It also illustrates the application of the theory to real-world situations, such as spacecraft attitude determination, GPS navigation, orbit determination, and aircraft tracking.

Dynamic stochastic general equilibrium (DSGE) models have become one of the workhorses of modern macroeconomics and are extensively used for academic research as well as forecasting and policy analysis at central banks. This book introduces readers to state-of-the-art computational techniques used in the Bayesian analysis of DSGE models. The book covers Markov chain Monte Carlo techniques for linearized DSGE models, novel sequential Monte Carlo methods that can be used for parameter inference, and the estimation of nonlinear DSGE models based on particle filter approximations of the likelihood function. The theoretical foundations of the algorithms are discussed in depth, and detailed empirical applications and numerical illustrations are provided. The book also gives invaluable advice on how to tailor these algorithms to specific applications and assess the accuracy and reliability of the computations. Bayesian Estimation of DSGE Models is essential reading for graduate students, academic researchers, and practitioners at policy institutions.

"Character" has become a front-and-center topic in contemporary discourse, but this term does not have a fixed meaning. Character may be simply defined by what someone does not do, but a more active and thorough definition is necessary, one that addresses certain vital questions. Is character a singular characteristic of an individual, or is it composed of different aspects? Does character--however we define it--exist in degrees, or is it simply something one

happens to have? How can character be developed? Can it be learned? Relatedly, can it be taught, and who might be the most effective teacher? What roles are played by family, schools, the media, religion, and the larger culture? This groundbreaking handbook of character strengths and virtues is the first progress report from a prestigious group of researchers who have undertaken the systematic classification and measurement of widely valued positive traits. They approach good character in terms of separate strengths—authenticity, persistence, kindness, gratitude, hope, humor, and so on—each of which exists in degrees. Character Strengths and Virtues classifies twenty-four specific strengths under six broad virtues that consistently emerge across history and culture: wisdom, courage, humanity, justice, temperance, and transcendence. Each strength is thoroughly examined in its own chapter, with special attention to its meaning, explanation, measurement, causes, correlates, consequences, and development across the life span, as well as to strategies for its deliberate cultivation. This book demands the attention of anyone interested in psychology and what it can teach about the good life.

The International Conference on Computational Fluid Dynamics is held every two years and brings together physicists, mathematicians and engineers to review and share recent advances in mathematical and computational techniques for modeling fluid flow. The proceedings of the 2010 conference (ICCFD6) held in St Petersburg, Russia, contain a selection of refereed contributions and are meant to serve as a source of reference for all those interested in the state of the art in computational fluid dynamics.

30th International Symposium on Shock Waves 1

An Encyclopedic Lexicon of the English Language and a Pronouncing and Etymological Dictionary of Names in Geography, Biography, Mythology, History, Art, Etc., Together with Atlas of the World

Discovering Evolution Equations with Applications

Workshop Processes, Practices and Materials

Official Gazette of the United States Patent Office

A Shock-Fitting Primer

These proceedings collect the papers presented at the 30th International Symposium on Shock Waves (ISSW30), which was held in Tel-Aviv Israel from July 19 to July 24, 2015. The Symposium was organized by Ortra Ltd. The ISSW30 focused on the state of knowledge of the following areas: Nozzle Flow, Supersonic and Hypersonic Flows with Shocks, Supersonic Jets, Chemical Kinetics, Chemical Reacting Flows, Detonation, Combustion, Ignition, Shock Wave Reflection and Interaction, Shock Wave Interaction with Obstacles, Shock Wave Interaction with Porous Media, Shock Wave Interaction with Granular Media, Shock Wave Interaction with Dusty Media, Plasma, Magnetohydrodynamics, Re-entry to Earth Atmosphere, Shock Waves in Rarefied Gases, Shock Waves in Condensed Matter (Solids and Liquids), Shock Waves in Dense Gases, Shock Wave Focusing, Richtmyer-Meshkov Instability, Shock Boundary Layer Interaction, Multiphase Flow, Blast Waves, Facilities, Flow Visualization, and Numerical Methods. The two volumes serve as a reference for the participants of the ISSW30 and anyone interested in these fields.

Discovering Evolution Equations with Applications: Volume 1—Deterministic Equations provides an engaging, accessible account of core theoretical results of evolution equations in a way that gradually builds intuition and culminates in exploring active research. It gives nonspecialists, even those with minimal prior exposure to analysis, the foundation to understand what evolution equations are and how to work with them in various areas of practice. After presenting the essentials of analysis, the book discusses homogenous finite-dimensional ordinary differential equations. Subsequent chapters then focus on linear homogenous abstract, nonhomogenous linear, semi-linear, functional, Sobolev-type, neutral, delay, and nonlinear evolution equations. The final two chapters explore research topics, including nonlocal evolution equations. For each class of equations, the author develops a core of theoretical results concerning the existence and uniqueness of solutions under various growth and compactness assumptions, continuous dependence upon initial data and parameters, convergence results regarding the initial data, and elementary stability results. By taking an applications-oriented approach, this self-contained, conversational-style book motivates readers to fully grasp the mathematical details of studying evolution equations. It prepares newcomers to successfully navigate further research in the field.

This is a guide to recommended practices for crime scene investigation. The guide is presented in five major sections, with sub-sections as noted: (1) Arriving at the Scene: Initial Response/Prioritization of Efforts (receipt of information, safety procedures, emergency care, secure and control persons at the scene, boundaries, turn over control of the scene and brief investigator/s in charge, document actions and observations); (2) Preliminary Documentation and Evaluation of the Scene (scene assessment, "walk-through" and initial documentation); (3) Processing the Scene (team composition, contamination control, documentation and prioritize, collect, preserve, inventory, package, transport, and submit evidence); (4) Completing and Recording the Crime Scene Investigation (establish debriefing team, perform final survey, document the scene); and (5) Crime Scene Equipment (initial responding officers, investigator/evidence technician, evidence collection kits).

American Military History provides the United States Army—in particular, its young officers, NCOs, and cadets—with a comprehensive but brief account of its past. The Center of Military History first published this work in 1956 as a textbook for senior ROTC courses. Since then it has gone through a number of updates and revisions, but the primary intent has remained the same. Support for military history education has always been a principal mission of the Center, and this new edition of an invaluable history furthers that purpose. The history of an active organization tends to expand rapidly as the organization grows larger and more complex. The period since the Vietnam War, at which point the most recent edition ended, has been a significant one for the Army, a busy period of expanding roles and missions and of fundamental organizational changes. In particular, the explosion of missions and deployments since 11 September 2001 has necessitated the creation of additional, open-ended chapters in

the story of the U.S. Army in action. This first volume covers the Army's history from its birth in 1775 to the eve of World War I. By 1917, the United States was already a world power. The Army had sent large expeditionary forces beyond the American hemisphere, and at the beginning of the new century Secretary of War Elihu Root had proposed changes and reforms that within a generation would shape the Army of the future. But world war-global war-was still to come. The second volume of this new edition will take up that story and extend it into the twenty-first century and the early years of the war on terrorism and includes an analysis of the wars in Afghanistan and Iraq up to January 2009.

Scientific American

The ICU Book

Green's Functions and Linear Differential Equations

A Guide for Law Enforcement

A Differential Geometric Approach

Basic and Fundamental Issues

Handbook of Numerical Methods for Hyperbolic Problems explores the changes that have taken place in the past few decades regarding literature in the design, analysis and application of various numerical algorithms for solving hyperbolic equations. This volume provides concise summaries from experts in different types of algorithms, so that readers can find a variety of algorithms under different situations and readily understand their relative advantages and limitations. Provides detailed, cutting-edge background explanations of existing algorithms and their analysis Ideal for readers working on the theoretical aspects of algorithm development and its numerical analysis Presents a method of different algorithms for specific applications and the relative advantages and limitations of different algorithms for engineers or readers involved in applications Written by leading subject experts in each field who provide breadth and depth of content coverage

Fourier Series in Several Variables with Applications to Partial Differential Equations illustrates the value of Fourier series methods in solving difficult nonlinear partial differential equations (PDEs). Using these methods, the author presents results for stationary Navier-Stokes equations, nonlinear reaction-diffusion systems, and quasilinear e

This volume explores the development of literary culture in sixteenth-century England as a whole. Beginning with Erasmus's first visit to the country in 1499 and ending in the year of Hamlet a century later, it seeks to explain the relationship between the Reformation and the Elizabethan literary renaissance in the later part of the period. Its central theme is the 'common' in its double sense of something shared and something base, and it argues thatmaking common the work of God is at the heart of the English Reformation just as making common the literature of antiquity and of early modern Europe is at the heart of the English Renaissance. Its centralquestion is 'why was the Renaissance in England so late?'

Nonlinear Optimal Control Theory presents a deep, wide-ranging introduction to the mathematical theory of the optimal control of processes governed by ordinary differential equations and certain types of differential equations with memory. Many examples illustrate the mathematical issues that need to be addressed when using optimal control techniques in diverse areas. Drawing on classroom-tested material from Purdue University and North Carolina State University, the book gives a unified account of bounded state problems governed by ordinary, integrodifferential, and delay systems. It also discusses Hamilton-Jacobi theory. By providing a sufficient and rigorous treatment of finite dimensional control problems, the book equips readers with the foundation to deal with other types of control problems, such as those governed by stochastic differential equations, partial differential equations, and differential games.

Group Inverses of M-Matrices and Their Applications

Modeling and Control in Vibrational and Structural Dynamics

An Introduction to Stochastic Modeling

An Introduction to Sociology

Crime Scene Investigation

Nonlinear Optimal Control Theory

Respiratory ailments are the most common reason for emergency admission to hospital, the most common reason to visit the GP, and cost the NHS more than any other disease area. This pocket-sized handbook allows instant access to a wealth of information needed in the day-to-day practice of respiratory medicine.

How can geckoes walk on the ceiling and basilisk lizards run over water? What are the aerodynamic effects that enable small insects to fly? What are the relative merits of squids' jet-propelled swimming and fishes' tail-powered swimming? Why do horses change gait as they increase speed? What determines our own vertical leap? Recent technical advances have greatly increased researchers' ability to answer these questions with certainty and in detail. This text provides an up-to-date overview of how animals run, walk, jump, crawl, swim, soar, hover, and fly. Excluding only the tiny creatures that use cilia, it covers all animals that power their movements with muscle--from roundworms to whales, clams to elephants, and gnats to albatrosses. The introduction sets out the general rules governing all modes of animal locomotion and considers the performance criteria--such as speed, endurance, and economy--that have shaped their selection. It introduces energetics and optimality as basic principles. The text then tackles each of the major modes by which animals move on land, in water, and through air. It explains the mechanisms involved and the physical and biological forces shaping those mechanisms, paying particular attention to energy costs. Focusing on general principles but extensively discussing a wide variety of individual cases, this is a superb synthesis of current knowledge about animal locomotion. It will be enormously useful to advanced undergraduates, graduate students, and a range of professional biologists, physicists, and engineers.

A comprehensive and engaging textbook, providing a graduate-level, non-historical, modern introduction of quantum mechanical concepts.

Monthly magazine devoted to topics of general scientific interest.

Powerful knowledge and the powers of knowledge

The Century Dictionary and Cyclopedia

The United States Army and the Forging of a Nation, 1775-1917

Oxford Handbook of Respiratory Medicine

Computational Fluid Dynamics 2010

Rainfall-Runoff Modelling

Free Mathematica 10 Update Included! Now available from www.wiley.com/go/magrab Updated material includes: - Creating regions and volumes of arbitrary shape and determining their properties: arc length, area, centroid, and area moment of inertia - Performing integrations, solving equations, and determining the maximum and minimum values over regions of arbitrary shape - Solving numerically a class of linear second order partial differential equations in regions of arbitrary shape using finite elements *An Engineer's Guide to Mathematica* enables the reader to attain the skills to create Mathematica 9 programs that solve a wide range of engineering problems and that display the results with annotated graphics. This book can be used to learn Mathematica, as a companion to engineering texts, and also as a reference for obtaining numerical and symbolic solutions to a wide range of engineering topics. The material is presented in an engineering context and the creation of interactive graphics is emphasized. The first part of the book introduces Mathematica's syntax and commands useful in solving engineering problems. Tables are used extensively to illustrate families of commands and the effects that different options have on their output. From these tables, one can easily determine which options will satisfy one's current needs. The order of the material is introduced so that the engineering applicability of the examples increases as one progresses through the chapters. The second part of the book obtains solutions to representative classes of problems in a wide range of engineering specialties. Here, the majority of the solutions are presented as interactive graphics so that the results can be explored parametrically. Key features: Material is based on Mathematica 9 Presents over 85 examples on a wide range of engineering topics, including vibrations, controls, fluids, heat transfer, structures, statistics, engineering mathematics, and optimization Each chapter contains a summary table of the Mathematica commands used for ease of reference Includes a table of applications summarizing all of the engineering examples presented. Accompanied by a website containing Mathematica notebooks of all the numbered examples *An Engineer's Guide to Mathematica* is a must-have reference for practitioners, and graduate and undergraduate students who want to learn how to solve engineering problems with Mathematica.

Green's Functions and Linear Differential Equations: Theory, Applications, and Computation presents a variety of methods to solve linear ordinary differential equations (ODEs) and partial differential equations (PDEs). The text provides a sufficient theoretical basis to understand Green's function method, which is used to solve initial and boundary

Group inverses for singular M-matrices are useful tools not only in matrix analysis, but also in the analysis of stochastic processes, graph theory, electrical networks, and demographic models. *Group Inverses of M-Matrices and Their Applications* highlights the importance and utility of the group inverses of M-matrices in several application areas. After introducing sample problems associated with Leslie matrices and stochastic matrices, the authors develop the basic algebraic and spectral properties of the group inverse of a general matrix. They then derive formulas for derivatives of matrix functions and apply the formulas to matrices arising in a demographic setting, including the class of Leslie matrices. With a focus on Markov chains, the text shows how the group inverse of an appropriate M-matrix is used in the perturbation analysis of the stationary distribution vector as well as in the derivation of a bound for the asymptotic convergence rate of the underlying Markov chain. It also illustrates how to use the group inverse to compute and analyze the mean first passage matrix for a Markov chain. The final chapters focus on the Laplacian matrix for an undirected graph and compare approaches for computing the group inverse. Collecting diverse results into a single volume, this self-contained book emphasizes the connections between problems arising in Markov chains, Perron eigenvalue analysis, and spectral graph theory. It shows how group inverses offer valuable insight into each of these areas.

We are facing a global energy crisis caused by world population growth, an escalating increase in demand, and continued dependence on fossil-based fuels for generation. It is widely accepted that increases in greenhouse gas concentration levels, if not reversed, will result in major changes to world climate with consequential effects on our society and economy. This is just the kind of intractable problem that Purdue University's Global Policy Research Institute seeks to address in the Purdue Studies in Public Policy series by promoting the engagement between policy makers and experts in fields such as engineering and technology. Major steps forward in the development and use of technology are required. In order to achieve solutions of the required scale and magnitude within a limited timeline, it is essential that engineers be not only technologically-adept but also aware of the wider social and political issues that policy-makers face. Likewise, it is also imperative that policy makers liaise closely with the academic community in order to realize advances. This book is designed to bridge the gap between these two groups, with a particular emphasis on educating the socially-conscious engineers and technologists of the future. In this accessibly-written volume, central issues in global energy are discussed through interdisciplinary dialogue between experts from both North America and Europe. The first section provides an overview of the nature of the global energy crisis approached from historical, political, and sociocultural perspectives. In the second section, expert contributors outline the technology and policy issues facing the development of major conventional and renewable energy sources. The third and final section explores policy and technology challenges and opportunities in the distribution and consumption of energy, in sectors such as transportation and the built environment. The book's epilogue suggests some future scenarios in energy distribution and use.

ISSW30 - Volume 1

The Silent Language

Character Strengths and Virtues

Bayesian Estimation of DSGE Models

Bioinformatics for Geneticists

Fourier Series in Several Variables with Applications to Partial Differential Equations

Workshop Processes, Practices and Materials is an ideal introduction to workshop processes, practices and materials for

entry-level engineers and workshop technicians. With detailed illustrations throughout and simple, clear language, this is a practical introduction to what can be a very complex subject. It has been significantly updated and revised to include new material on adhesives, protective coatings, plastics and current Health and Safety legislation. It covers all the standard topics, including safe practices, measuring equipment, hand and machine tools, materials and joining methods, making it an indispensable handbook for use both in class and the workshop. Its broad coverage makes it a useful reference book for many different courses worldwide.

The 'knowledge turn' in curriculum studies has drawn attention to the central role that knowledge of the disciplines plays in education, and to the need for new thinking about how we understand knowledge and knowledge-building. *Knowing History in Schools* explores these issues in the context of teaching and learning history through a dialogue between the eminent sociologist of curriculum Michael Young, and leading figures in history education research and practice from a range of traditions and contexts. With a focus on Young's 'powerful knowledge' theorisation of the curriculum, and on his more recent articulations of the 'powers' of knowledge, this dialogue explores the many complexities posed for history education by the challenge of building children's historical knowledge and understanding. The book builds towards a clarification of how we can best conceptualise knowledge-building in history education. Crucially, it aims to help history education students, history teachers, teacher educators and history curriculum designers navigate the challenges that knowledge-building processes pose for learning history in schools.

Modeling and Control in Vibrational and Structural Dynamics: A Differential Geometric Approach describes the control behavior of mechanical objects, such as wave equations, plates, and shells. It shows how the differential geometric approach is used when the coefficients of partial differential equations (PDEs) are variable in space (waves/plates), when the PDEs themselves are defined on curved surfaces (shells), and when the systems have quasilinear principal parts. To make the book self-contained, the author starts with the necessary background on Riemannian geometry. He then describes differential geometric energy methods that are generalizations of the classical energy methods of the 1980s. He illustrates how a basic computational technique can enable multiplier schemes for controls and provide mathematical models for shells in the form of free coordinates. The author also examines the quasilinearity of models for nonlinear materials, the dependence of controllability/stabilization on variable coefficients and equilibria, and the use of curvature theory to check assumptions. With numerous examples and exercises throughout, this book presents a complete and up-to-date account of many important advances in the modeling and control of vibrational and structural dynamics.

This best-selling resource provides a general overview and basic information for all adult intensive care units. The material is presented in a brief and quick-access format which allows for topic and exam review. It provides enough detailed and specific information to address most all questions and problems that arise in the ICU. Emphasis on fundamental principles in the text should prove useful for patient care outside the ICU as well. New chapters in this edition include hyperthermia and hypothermia syndromes; infection control in the ICU; and severe airflow obstruction. Sections have been reorganized and consolidated when appropriate to reinforce concepts.

Understanding the Global Energy Crisis

Handbook of Numerical Methods for Hyperbolic Problems

Shock Fitting

The Primer

Theory, Applications, and Computation

Volume 1-Deterministic Equations

This book describes the revolutionary capabilities of new shock fitting algorithms; a great improvement in computational fluid dynamics (CFD) for high-speed numerical simulations. Shock fitting methods provide a solution to the current difficulties and inaccuracies in shock-capturing approaches. This work traces the evolution of shock-fitting methods, from the pioneering methods based on the structured grids (boundary and floating shock-fitting) to recent developments on unstructured grids, illustrating algorithmic details, significant applications and potential developments. Also, to celebrate the centenary birth of the father of shock-fitting techniques, the book also includes a tribute to Gino Moretti, as well as his unpublished manuscript. This book will appeal to professionals, researchers, and graduate students in the field of CFD.

Introduction to the Calculus of Variations and Control with Modern Applications provides the fundamental background required to develop rigorous necessary conditions that are the starting points for theoretical and numerical approaches to modern variational calculus and control problems. The book also presents some classical sufficient conditions and discusses the importance of distinguishing between the necessary and sufficient conditions. In the first part of the text, the author develops the calculus of variations and provides complete proofs of the main results. He explains how the ideas behind the proofs are essential to the development of modern optimization and control theory. Focusing on optimal control problems, the second part shows how optimal control is a natural extension of the classical calculus of variations to more complex problems. By emphasizing the basic ideas and their mathematical development, this book gives you the foundation to use these mathematical tools to then tackle new problems. The text moves from simple to more complex problems, allowing you to see how the fundamental theory can be modified to address more difficult and advanced challenges. This approach helps you understand how to deal with future problems and applications in a realistic work environment.

A defining feature of nonlinear hyperbolic equations is the occurrence of shock waves. While the popular shock-capturing methods are easy to implement, shock-fitting techniques provide the most accurate results. A Shock-Fitting Primer presents the proper numerical treatment of shock waves and other discontinuities. The book begins by recounting the

Rainfall-Runoff Modelling: The Primer Second Edition focuses on predicting hydrographs using models based on data and on representations of hydrological process. Dealing with the history of the development of rainfall-runoff models, uncertainty in mode predictions, good and bad practice and ending with a look at how to predict future catchment hydrological responses this book provides an essential underpinning of rainfall-runoff modelling topics."--pub. desc.

Optimal Estimation of Dynamic Systems

Introduction to the Calculus of Variations and Control with Modern Applications

Proceedings of the Sixth International Conference on Computational Fluid Dynamics, ICCFD6, St Petersburg, Russia, on July 12-16, 2010

Medical and Health Care Books and Serials in Print

An Engineer's Guide to Mathematica

Modern Quantum Mechanics