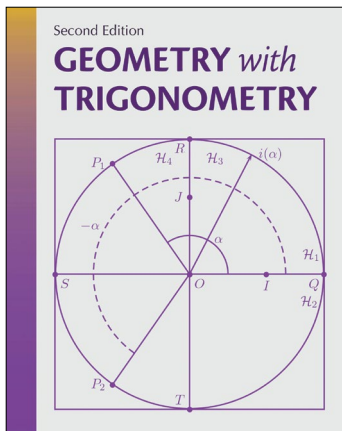
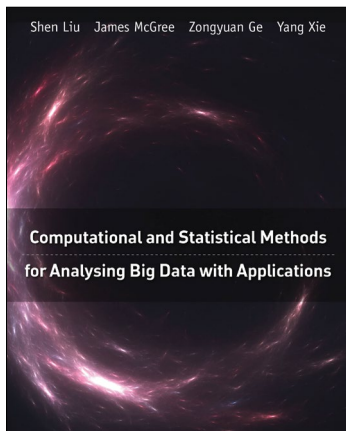
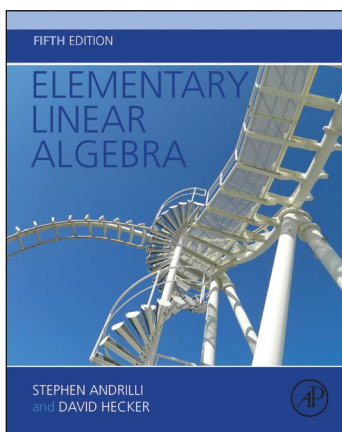
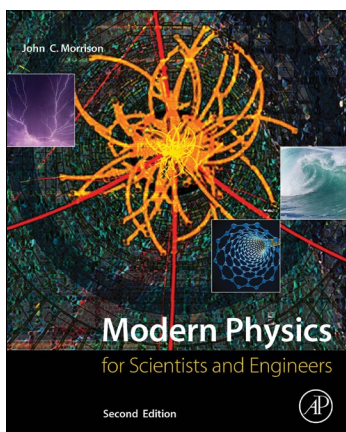


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ISBN: 978-0-12-805418-5

PUB DATE: April 2016

FORMAT: Paperback

PAGES: c. 160

AUDIENCE

Students and researchers across the sciences interested in improving their oral communication skills; in particular non-native English speakers

Oral Communication Skills for Scientific Presentations

William B. Krantz President's Teaching Scholar and Professor Emeritus, University of Colorado, Boulder, CO, USA; Rieveschl Ohio Eminent Scholar and Professor Emeritus, University of Cincinnati, Cincinnati, OH, USA



A practical, compact guidebook covering the 'nuts and bolts' of effective public speaking

KEY FEATURES

- Discusses best practices in putting together an effective talk
- Focuses on leveraging the speaker's existing skill sets to develop the delivery style that works best for that individual
- Features one-page quick reference guides for giving formal oral and informal poster presentations
- Addresses cross-cultural communication as well as particular concerns for non-native English speakers
- Includes a companion site with tools and video examples of formal and informal presentations for further self-guidance

DESCRIPTION

Oral Communication Skills for Scientific Presentations is intended for inexperienced speakers as well as those aspiring to improve their communication skills in making either formal or informal presentations on a technical subject. A complement to having good organization for a technical presentation is to have an effective delivery style. This book provides a template for organizing a technical talk that will include a discussion of various ways to effectively develop each part of a technical presentation.

A special feature of *Oral Communication Skills for Scientific Presentations* is the focus on making presentations to a cross-cultural audience. This relates to relatively minor considerations such as how to list the names of the co-authors on your presentation as well as to more substantive considerations such as how to handle eye contact and use humor, both of which can differ across the global spectrum of cultures. The cross-cultural focus of this book relates not only to the audience, but also to the speaker. This book also includes helpful tips for non-native English speakers.

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Graduate Research, 4e

A Guide for Students in the Sciences

Robert V. Smith Collaborative Brain Trust University Consulting (CBT UC),
Sacramento, CA, USA

Llewellyn D. Densmore Department of Biological Sciences, Texas Tech
University, Lubbock, TX, USA

Edward F. Lener University Libraries, Virginia Tech, Blacksburg, VA, USA



This newly revised go-to resource is for graduate researchers at all stages of study and covers a range of topics including writing and preparation of research proposals, developing and refining teaching skills, and ethics and compliance areas such as research involving human subjects and animals

KEY FEATURES

- Discusses a broad range of topics including time management, library and literature work, and grant support
- Includes a new chapter on career planning and development with advice on careers in academia, government, and the private sector
- Contains chapters that promote the development of a varied set of communication skills
- Greatly expanded treatment of graduate study and research in international settings

DESCRIPTION

Graduate Research is an all-in-one resource for prospective and matriculated graduate students in the sciences. The newly revised edition includes updates to every chapter. *Graduate Research* covers a range of topics including writing and preparation of research proposals, developing and refining teaching skills, and ethics and compliance areas such as research involving human subjects and animals.

Graduate Research helps readers navigate the multidimensional and interdisciplinary world of scientific research and it is an invaluable resource for graduate researchers as well as those in advising or mentoring roles.

ISBN: 978-0-12-803749-2

PREVIOUS EDITION ISBN:
9780295977058

PUB DATE: February 2016

FORMAT: Paperback

PAGES: c. 288

AUDIENCE

Graduate student, graduate
advisors, and mentors across the
Sciences

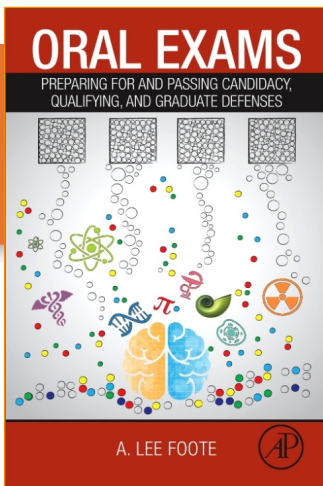
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ISBN: 978-0-12-802578-9

PUB DATE: September 2015

FORMAT: Paperback

PAGES: c. 192

AUDIENCE

Graduate students, postdoctoral fellows and faculty in every discipline

Oral Exams

Preparing For and Passing Candidacy, Qualifying, and Graduate Defenses

Lee A Foote Professor and Director, Devonian Botanic Garden, University of Alberta, Edmonton, AB, Canada



This book provides students with a great resource to help them prepare for oral comprehensive and viva voce exams, and is also valuable for faculty as they prepare new questions.

KEY FEATURES

- Describes in detail the general format of oral comprehensive exams, viva voce examinations and defenses, what to expect, and what the requirements are that students need to fulfill to pass.
- Includes appendices with numerous practice questions sourced from a range of disciplines and countries for individual or group learning
- Useful for Early Career academics that are supervising, supporting, and examining PhD students

DESCRIPTION

Oral Exams: Preparing For and Passing Candidacy, Qualifying, and Graduate Defenses provides guidance on how to prepare for oral comprehensive and viva voce exams.

Topics discussed include the supervisory committee, preparing the seminar, arranging content, mental preparation, question framing, and the types of questions to expect.

At its core, the book prepares students to be the best they can be by offering insights into how to interpret and appropriately respond to explicit and implied oral comps questions.

This book benefits faculty by helping them prepare new questions, also providing tips on how to mentor their students in preparation for exams.

The training included can be used to prepare for intensive qualifying or certification exams, job interviews, and presentations.

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COMMUNICATE SCIENCE
PAPERS, PRESENTATIONS,
AND POSTERS EFFECTIVELY



GREGORY S. PATIENCE
DARIA C. BOFFITO
PAUL A. PATIENCE



ISBN: 978-0-12-801500-1

PUB DATE: August 2015

FORMAT: Paperback

PAGES: c. 264

AUDIENCE

Graduate students, research fellows, post-docs, professors, scientists and researchers in STEM fields.

Communicate Science Papers, Presentations, and Posters Effectively

Gregory S. Patience Department of Chemical Engineering, Ecole Polytechnique de Montreal, Canada

Daria C. Boffito Department of Chemical Engineering, Ecole Polytechnique de Montreal, Canada

Paul Patience Ecole Polytechnique de Montreal, Canada



The tools readers need to become better writers, presenters, and communicators

KEY FEATURES

- Covers how to accurately and clearly exhibit results, ideas, and conclusions
- Identifies phrases common in scientific literature that should never be used
- Discusses the theory of presentation, including “before and after” examples highlighting best practices
- Provides concrete, step-by-step examples on how to make camera ready graphs and tables

DESCRIPTION

Communicate Science Papers, Presentations, and Posters Effectively is a guidebook on science writing and communication that professors, students, and professionals in the STEM fields can use in a practical way. This book advocates a clear and concise writing and presenting style, enabling users to concentrate on content.

The text is useful to both native and non-native English speakers, identifying best practices for preparing graphs and tables, and offering practical guidance for writing equations. It includes content on significant figures and error bars, and provides the reader with extensive practice material consisting of both exercises and solutions.

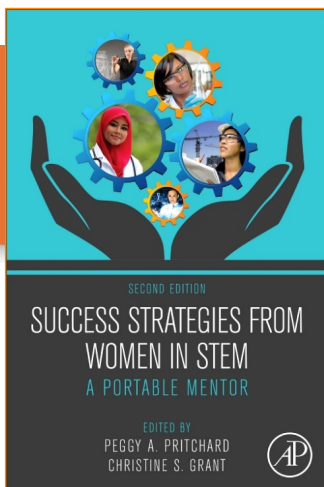
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ISBN: 978-0-12-397181-4

PREVIOUS EDITION ISBN:
978-0-12-088411-7

PUB DATE: June 2015

FORMAT: Paperback

PAGES: c. 460

AUDIENCE

Women pursuing careers or involved in careers in science, technology, engineering and mathematics

Success Strategies From Women in STEM, 2e

A Portable Mentor

Edited by: **Peggy A. Pritchard** Associate Librarian, Learning and Curriculum Support Team, University of Guelph, Guelph, ON, Canada

Christine Grant PhD, Full Professor of Chemical and Biomolecular Engineering and Associate Dean of Faculty Advancement, North Carolina State University, College of Engineering, Raleigh, NC, USA



A comprehensive and accessible manual that provides valuable strategies, tools, and success tips for women pursuing and involved in STEM careers

"...we need women to fully participate in this industry...morally and ethically, it's simply the right thing to do. This book will undoubtedly help."--**Network Security, *Success Strategies from Women in STEM, Second Edition***

KEY FEATURES

- Preserves the style and tone of the first edition by bringing together mentors, trainees and early-career professionals in a series of conversations about important topics related to careers in STEM fields, such as leadership, time stress, negotiation, networking, social media and more
- Identifies strategies that can improve career success along with stories that elucidate, engage, and inspire
- Companion website provides authoritative information from successful women engaged in STEM careers, including annotated links to key organizations, associations, granting agencies, teaching support materials, and more

DESCRIPTION

Success Strategies from Women in Stem: A Portable Mentor, Second Edition, is a comprehensive and accessible manual containing career advice, mentoring support, and professional development strategies for female scientists in the STEM fields.

This updated text contains new and essential chapters on leadership and negotiation, important coverage of career management, networking, social media, communication skills, and more. The work is accompanied by a companion website that contains annotated links, a list of print and electronic resources, self-directed learning objects, frequently asked questions, and more.

With an increased focus on international relevance, this comprehensive text contains shared stories and vignettes that will help women pursuing or involved in STEM careers develop the necessary professional and personal skills to overcome obstacles to advancement.

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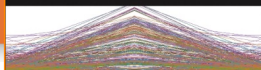
PROFESSIONAL AND CAREER DEVELOPMENT

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Methods and Applications of Longitudinal Data Analysis



Xian Liu



ISBN: 978-0-12-801342-7

PUB DATE: September 2015

FORMAT: Hardback

PAGES: c. 512

AUDIENCE

Statisticians, demographers, policymakers and insurance companies involved in longitudinal data analysis, as well as professionals, academics and graduate students of various disciplines including sociology, population studies, economics, psychology, geography and political science, biology, medicine and public health. Applied statisticians and other quantitative methodologists can also use the book as a convenient reference.

Methods and Applications of Longitudinal Data Analysis

Xian Liu Professor of Research, Department of Psychiatry and Senior Scientist, Center for the Study of Traumatic Stress, F. Edward Hebert School of Medicine, Uniformed Services, University of the Health Sciences, and Research Scientist/Senior Statistician, DoD Deployment Health Clinical Center, Defense Centers of Excellence, Walter Reed National Military Medical Center, Bethesda, MD, USA



From classical to the most advanced longitudinal methods, a complete guide, empirically illustrated

KEY FEATURES

- From novice to professional: this book starts with the introduction of basic models and ends with the description of some of the most advanced models in longitudinal data analysis
- Enables students to select the correct statistical methods to apply to their longitudinal data and avoid the pitfalls associated with incorrect selection
- Identifies the limitations of classical repeated measures models and describes newly developed techniques, along with real-world examples.

DESCRIPTION

Methods and Applications of Longitudinal Data Analysis describes methods for the analysis of longitudinal data in the medical, biological and behavioral sciences. It introduces basic concepts and functions including a variety of regression models, and their practical applications across many areas of research. Statistical procedures featured within the text include:

- descriptive methods for delineating trends over time
- linear mixed regression models with both fixed and random effects
- covariance pattern models on correlated errors
- generalized estimating equations
- nonlinear regression models for categorical repeated measurements
- techniques for analyzing longitudinal data with non-ignorable missing observations

Emphasis is given to applications of these methods, using substantial empirical illustrations, designed to help users of statistics better analyze and understand longitudinal data.

Methods and Applications of Longitudinal Data Analysis equips both graduate students and professionals to confidently apply longitudinal data analysis to their particular discipline. It also provides a valuable reference source for applied statisticians, demographers and other quantitative methodologists.

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BENT FUNCTIONS

NATALIA TOKAREVA

RESULTS AND APPLICATIONS TO CRYPTOGRAPHY



ISBN: 978-0-12-802318-1

PUB DATE: August 2015

FORMAT: Paperback

PAGES: c. 210

AUDIENCE

Researchers in discrete math and cryptography; students and professors of math and IT departments

Bent Functions

Results and Applications to Cryptography

Natalia Tokareva Sobolev Institute of Mathematics, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russian Federation Department of Mathematics and Mechanics, Novosibirsk State University, Novosibirsk, Russian Federation



Focused primer on Boolean bent functions and their applications in combinatorics, coding theory, and cryptography

KEY FEATURES

- Provides a detailed survey of bent functions and their main results, presenting a systematic overview of their generalizations and applications
- Presents a systematic and detailed survey of hundreds of results in the area of highly nonlinear Boolean functions in cryptography
- Appropriate coverage for students from advanced specialists in cryptography, mathematics, and creators of ciphers

DESCRIPTION

Bent Functions: Results and Applications to Cryptography offers a unique survey of the objects of discrete mathematics known as Boolean bent functions. As these maximal, nonlinear Boolean functions and their generalizations have many theoretical and practical applications in combinatorics, coding theory, and cryptography, the text provides a detailed survey of their main results, presenting a systematic overview of their generalizations and applications, and considering open problems in classification and systematization of bent functions.

The text is appropriate for novices and advanced researchers, discussing proofs of several results, including the automorphism group of bent functions, the lower bound for the number of bent functions, and more.

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GEOMETRIC MEASURE THEORY

A BEGINNER'S GUIDE
5TH EDITION

FRANK MORGAN



Geometric Measure Theory, 5e

A Beginner's Guide

Frank Morgan Williams College, Williamstown, MA, USA



A beautifully intuitive and fully illustrated introduction to the subject for newcomers, intended as the necessary 'big picture' primer to more advanced math

KEY FEATURES

- Focus on core geometry rather than proofs paves the way to fast and efficient insight into an extremely complex topic in geometric structures, enabling further study of more advanced topics and texts.
- Demonstrates in the simplest possible way how to relate concepts of geometric analysis by way of algebraic or topological techniques
- Full topical coverage of The Log-Convex Density Conjecture
- Comprehensively updated throughout

DESCRIPTION

Geometric measure theory provides the framework to understand the structure of a crystal, a soap bubble cluster, or a universe. *Geometric Measure Theory: A Beginner's Guide* is essential to any student who wants to learn geometric measure theory, and will appeal to researchers and mathematicians working in the field. Brevity, clarity and scope make this classic book an excellent introduction to more complex ideas from geometric measure theory and the calculus of variations for beginning graduate students and researchers. Morgan emphasizes geometry over proofs and technicalities providing a fast and efficient insight into many aspects of the subject.

New to this edition:

- New topical coverage of the Log Convex Density Conjecture, a major new theorem at the center of an area of mathematics that has exploded since its appearance in Perelman's proof of the Poincaré conjecture
- New topical coverage of Manifolds taking account of all recent research advances
- The 2nd edition is comprehensively reworked into two parts, basic theory and applications

ISBN: 978-0-12-804489-6

PREVIOUS EDITION ISBN:

978-0-12-374444-9

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 302

AUDIENCE

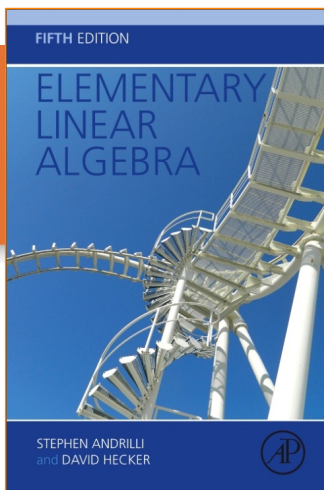
Graduate students and above with analysis backgrounds, researchers in differential geometry and geometric analysis.

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ISBN: 978-0-12-800853-9

PREVIOUS EDITION ISBN:
9780123747518

PUB DATE: April 2016

FORMAT: Hardback

PAGES: c. 780

AUDIENCE

upper level undergrads in math,
physical science and engineering

Elementary Linear Algebra, 5e

Stephen Andrilli LaSalle University, Philadelphia, PA, USA

David Hecker Saint Joseph's University, Philadelphia, PA, USA



Bringing its well-known strengths and concepts to students, this book provides solid theoretical linear algebra and real-world applications, including mathematical proofs, worked out examples, and exercises for practical use

KEY FEATURES

- Builds a foundation for math majors in reading and writing elementary mathematical proofs as part of their intellectual/professional development to assist in later math courses
- Presents each chapter as a self-contained and thoroughly explained modular unit.
- Provides clearly written and concisely explained ancillary materials, including four appendices expanding on the core concepts of elementary linear algebra
- Prepares students for future math courses by focusing on the conceptual and practical basics of proofs

DESCRIPTION

Elementary Linear Algebra, 5th edition, by Stephen Andrilli and David Hecker, is a textbook for a beginning course in linear algebra for sophomore or junior mathematics majors. This text provides a solid introduction to both the computational and theoretical aspects of linear algebra. The textbook covers many important real-world applications of linear algebra, including graph theory, circuit theory, Markov chains, elementary coding theory, least-squares polynomials and least-squares solutions for inconsistent systems, differential equations, computer graphics and quadratic forms. Also, many computational techniques in linear algebra are presented, including iterative methods for solving linear systems, **LDU** Decomposition, the Power Method for finding eigenvalues, **QR** Decomposition, and Singular Value Decomposition and its usefulness in digital imaging.

The most unique feature of the text is that students are nurtured in the art of creating mathematical proofs using linear algebra as the underlying context. The text contains a large number of worked out examples, as well as more than 970 exercises (with over 2600 total questions) to give students practice in both the computational aspects of the course and in developing their proof-writing abilities. Every section of the text ends with a series of true/false questions carefully designed to test the students' understanding of the material. In addition, each of the first seven chapters concludes with a thorough set of review exercises and additional true/false questions. Supplements to the text include an Instructor's Manual with answers to all of the exercises in the text, and a Student Solutions Manual with detailed answers to the starred exercises in the text. Finally, there are seven additional web sections available on the book's website to instructors who adopt the text.

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The Joy of Finite Mathematics

The Language and Art of Math

Chris P. Tsokos and Rebecca D. Wooten



ISBN: 978-0-12-802967-1

PUB DATE: November 2015

FORMAT: Paperback

PAGES: c. 532

AUDIENCE

Undergraduate non-science students, foundational content

The Joy of Finite Mathematics

The Language and Art of Math

Chris P. Tsokos University of South Florida, Tampa, FL, USA

Rebecca D Wooten University of South Florida, Tampa, FL, USA



Provides an engaging introduction to math for liberal arts, finance, and other non-science students

KEY FEATURES

- Highlighted definitions, rules, methods, and procedures, and abundant tables, diagrams, and graphs, clearly illustrate important concepts and methods
- Provides end-of-chapter vocabulary and concept reviews, as well as robust review exercises and a practice test
- Contains information relevant to a wide range of topics, including symbolic language, contemporary math, liberal arts math, social sciences math, basic math for finance, math for humanities, probability, and the C.L.A.S.T. exam
- Optional advanced sections and challenging problems are included for use at the discretion of the instructor
- Online resources include PowerPoint Presentations for instructors and a useful student manual

DESCRIPTION

The Joy of Finite Mathematics: The Language and Art of Math teaches students basic finite mathematics through a foundational understanding of the underlying symbolic language and its many dialects, including logic, set theory, combinatorics (counting), probability, statistics, geometry, algebra, and finance.

Through detailed explanations of the concepts, step-by-step procedures, and clearly defined formulae, readers learn to apply math to subjects ranging from reason (logic) to finance (personal budget), making this interactive and engaging book appropriate for non-science, undergraduate students in the liberal arts, social sciences, finance, economics, and other humanities areas.

The authors utilize important historical facts, pose interesting and relevant questions, and reference real-world events to challenge, inspire, and motivate students to learn the subject of mathematical thinking and its relevance.

The book is based on the authors' experience teaching Liberal Arts Math and other courses to students of various backgrounds and majors, and is also appropriate for preparing students for Florida's CLAST exam or similar core requirements.

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Fundamentals of Technical Mathematics

Sarhan M. Musa



ISBN: 978-0-12-801987-0

PUB DATE: October 2015

FORMAT: Paperback

PAGES: c. 394

AUDIENCE

Professional/practitioners and undergraduates, engineering technologists and technicians.

Fundamentals of Technical Mathematics

Sarhan M. Musa Associate Professor of Engineering Technology, Prairie View A&M University, Prairie View, TX, USA



This book provides an accessible resource on applied math for engineering technologists and technicians that reviews basic mathematics, including whole numbers, fractions, mixed numbers, decimals, percentages, ratios, and proportions and their conversions to different units of measure (standard and/or metric).

KEY FEATURES

- Presents foundational math concepts in a concise, engaging way
- Covers conversions to different units of measure (standard and/or metric) and other topics as required by specific businesses and industries
- Reviews basic mathematics, including whole numbers, fractions, mixed numbers, decimals, percentages, ratios, and proportions
- Connects concepts with recent applications in technology, engineering, manufacturing, and science
- Includes many practice and review problems

DESCRIPTION

Fundamentals of Technical Mathematics introduces key, applied mathematics for engineering technologists and technicians. Through a simple, engaging approach, the book reviews basic mathematics, including whole numbers, fractions, mixed numbers, decimals, percentages, ratios, and proportions.

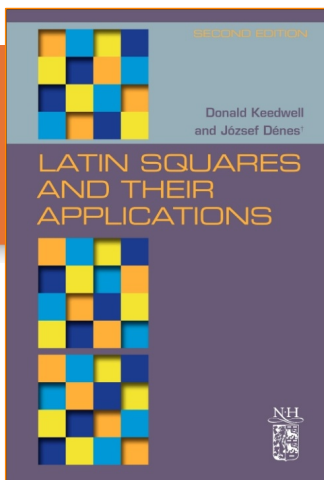
The book covers conversions to different units of measure (standard and/or metric) and other topics as required by specific businesses and industries, providing a go-to resource on the topic. Building on these foundations, it then explores concepts in arithmetic, introductory algebra, equations, inequalities, and modeling, graphs and functions, measurement, geometry, and trigonometry, all the while supporting these concepts with practical applications in a variety of technical and career vocations, including automotive, allied health, welding, plumbing, machine tool, carpentry, auto mechanics, HVAC, and many other fields. In addition, the book provides practical examples from a vast number of technologies.

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ISBN: 978-0-444-63555-6

PUB DATE: July 2015

FORMAT: Hardback

PAGES: c. 430

AUDIENCE

Researchers in combinatorial design theory and areas of statistics such as design and analysis of experiments. The book may also be of interest to amateur mathematicians interested in magic squares, in designing games tournaments and/or in latin squares related to Sudoku puzzles.

Latin Squares and Their Applications, 2e

A. Donald Keedwell Department of Mathematical and Computing Science, University of Surrey, Guildford, Surrey, UK

József Dénes Industrial and Scientific Consultant, Formerly Head of Mathematics, Institute for Research and Co-ordination of Computing Techniques (SZKI), Budapest, Hungary



This is a comprehensive revision of the definitive text on latin squares and related topics

KEY FEATURES

- Retains the organization and updated foundational material from the original edition
- Explores current and emerging research topics
- Includes the original 73 'Unsolved Problems' with the current state of knowledge regarding them, as well as new Unsolved Problems for further study

DESCRIPTION

Latin Squares and Their Applications Second edition offers a long-awaited update and reissue of this seminal account of the subject. The revision retains foundational, original material from the frequently-cited 1974 volume but is completely updated throughout. As with the earlier version, the author hopes to take the reader 'from the beginnings of the subject to the frontiers of research'. By omitting a few topics which are no longer of current interest, the book expands upon active and emerging areas. Also, the present state of knowledge regarding the 73 then-unsolved problems given at the end of the first edition is discussed and commented upon. In addition, a number of new unsolved problems are proposed.

Using an engaging narrative style, this book provides thorough coverage of most parts of the subject, one of the oldest of all discrete mathematical structures and still one of the most relevant. However, in consequence of the huge expansion of the subject in the past 40 years, some topics have had to be omitted in order to keep the book of a reasonable length.

Latin squares, or sets of mutually orthogonal latin squares (MOLS), encode the incidence structure of finite geometries; they prescribe the order in which to apply the different treatments in designing an experiment in order to permit effective statistical analysis of the results; they produce optimal density error-correcting codes; they encapsulate the structure of finite groups and of more general algebraic objects known as quasigroups.

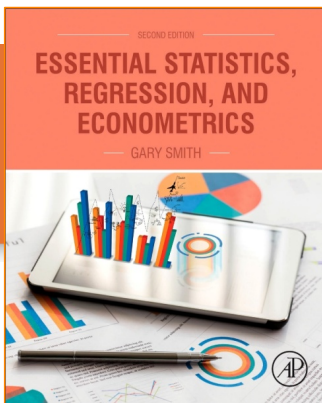
As regards more recreational aspects of the subject, latin squares provide the most effective and efficient designs for many kinds of games tournaments and they are the templates for Sudoku puzzles. Also, they provide a number of ways of constructing magic squares, both simple magic squares and also ones with additional properties.

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ISBN: 978-0-12-803459-0

PREVIOUS EDITION ISBN:
9780123822215

PUB DATE: June 2015

FORMAT: Hardback

PAGES: c. 390

AUDIENCE

Undergraduate and graduate students taking Econometrics or Regression courses - required in many economics, business, finance, politics, sociology, and psychology departments, as well as in some law and medical schools.

Essential Statistics, Regression, and Econometrics, 2e

Gary Smith Fletcher Jones Professor, Department of Economics, Pomona College, Claremont, CA, USA



Ideal for one-quarter or semester courses, this timely revision enables students to develop statistical reasoning for econometrics through an accessible, readable approach

KEY FEATURES

- Includes hundreds of updated and new, real-world examples to engage students in the meaning and impact of statistics
- Focuses on essential information to enable students to develop their own statistical reasoning
- Ideal for one-quarter or one-semester courses taught in economics, business, finance, politics, sociology, and psychology departments, as well as in law and medical schools

DESCRIPTION

Essential Statistics, Regression, and Econometrics, Second Edition, is innovative in its focus on preparing students for regression/econometrics, and in its extended emphasis on statistical reasoning, real data, pitfalls in data analysis, and modeling issues. This book is uncommonly approachable and easy to use, with extensive word problems that emphasize intuition and understanding. Too many students mistakenly believe that statistics courses are too abstract, mathematical, and tedious to be useful or interesting. To demonstrate the power, elegance, and even beauty of statistical reasoning, this book provides hundreds of new and updated interesting and relevant examples, and discusses not only the uses but also the abuses of statistics. The examples are drawn from many areas to show that statistical reasoning is not an irrelevant abstraction, but an important part of everyday life.

MATHEMATICS & STATISTICS

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ALGEBRAIC AND DISCRETE MATHEMATICAL METHODS FOR MODERN BIOLOGY

RAINA ROBEVA, EDITOR



ISBN: 978-0-12-801213-0

PUB DATE: March 2015

FORMAT: Hardback

PAGES: c. 368

AUDIENCE

Students and researchers in
biomathematics, mathematics, and
biology.

Algebraic and Discrete Mathematical Methods for Modern Biology

Edited by: **Raina Robeva** Professor of Mathematical Sciences, Sweet Briar
College, Sweet Briar, VA, USA



A complementary volume to Raina Robeva's book *Mathematical Concepts and Methods in Modern Biology: Using Modern Discrete Models*, enhancing our growing portfolio in the emerging area of mathematical biology

"This is an excellent book which would be suitable as a textbook...I therefore strongly recommend it, over other classic texts, for use in teaching Discrete Mathematics."--**MAA.org, *Algebraic and Discrete Mathematical Methods for Modern Biology***

KEY FEATURES

- Examines significant questions in modern biology and their mathematical treatments
- Presents important mathematical concepts and tools in the context of essential biology
- Features material of interest to students in both mathematics and biology
- Presents chapters in modular format so coverage need not follow the Table of Contents
- Introduces projects appropriate for undergraduate research
- Utilizes freely accessible software for visualization, simulation, and analysis in modern biology
- Requires no calculus as a prerequisite
- Provides a complete Solutions Manual
- Features a companion website with supplementary resources

DESCRIPTION

Written by experts in both mathematics and biology, *Algebraic and Discrete Mathematical Methods for Modern Biology* offers a bridge between math and biology, providing a framework for simulating, analyzing, predicting, and modulating the behavior of complex biological systems. Each chapter begins with a question from modern biology, followed by the description of certain mathematical methods and theory appropriate in the search of answers. Every topic provides a fast-track pathway through the problem by presenting the biological foundation, covering the relevant mathematical theory, and highlighting connections between them. Many of the projects and exercises embedded in each chapter utilize specialized software, providing students with much-needed familiarity and experience with computing applications, critical components of the "modern biology" skill set. This book is appropriate for mathematics courses such as finite mathematics, discrete structures, linear algebra, abstract/modern algebra, graph theory, probability, bioinformatics, statistics, biostatistics, and modeling, as well as for biology courses such as genetics, cell and molecular biology, biochemistry, ecology, and evolution.

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The Linear Algebra Survival Guide

Illustrated with *Mathematica*

Fred E. Szabo



ISBN: 978-0-12-409520-5

PUB DATE: February 2015

FORMAT: Paperback

PAGES: c. 420

AUDIENCE

Students taking a first or second course in linear algebra or needing a reference of the basics

The Linear Algebra Survival Guide

Illustrated with Mathematica

Fred Szabo Department of Mathematics, Concordia University, Montreal, Quebec, Canada



Learn linear algebra in an enjoyable and fun way, through visualization and easy computation

"...most useful for the Mathematica aspects, and that for tyros or occasional users." --**MAA.org**, *The Linear Algebra Survival Guide*

KEY FEATURES

- Includes computational oriented information that complements the essential topics in linear algebra.
- Presents core topics in a simple, straightforward way with examples for exploring computational illustrations, graphics, and displays using Mathematica.
- Provides numerous examples of short code in the text, which can be modified for use with exercises to develop graphics displays for teaching, learning, and demonstrations.

DESCRIPTION

The Linear Algebra Survival Guide offers a concise introduction to the difficult core topics of linear algebra, guiding you through the powerful graphic displays and visualization of Mathematica that make the most abstract theories seem simple - allowing you to tackle realistic problems using simple mathematical manipulations. This resource is therefore a guide to learning the content of Mathematica in a practical way, enabling you to manipulate potential solutions/outcomes, and learn creatively. No starting knowledge of the Mathematica system is required to use the book. Desktop, laptop, web-based versions of Mathematica are available on all major platforms. Mathematica Online for tablet and smartphone systems are also under development and increases the reach of the guide as a general reference, teaching and learning tool.

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FIXED POINT THEORY AND GRAPH THEORY

FOUNDATIONS AND INTEGRATIVE
APPROACHES



Monther Alfuraidean
Qamrul Hasan Ansari



ISBN: 978-0-12-804295-3

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 296

AUDIENCE

All academicians and PhD students
in the field of fixed point or graph
theory interested in applications.

Fixed Point Theory and Graph Theory

Edited by: **Monther Alfuraidean** King Fahd University, Saudi Arabia
Qamrul Ansari Aligarh Muslim University, India



This research monograph synthesizes and uniquely links research advances and applications between the otherwise isolated Metric Fixed Point Theory and Graph Theory domains, highly established theorems in mathematical analysis and discrete mathematics pertinent to applications

KEY FEATURES

- Introduces both metric fixed point and graph theory in terms of their disparate foundations and common application environments
- Provides a unique integration of otherwise disparate domains that aids both students seeking to understand either area and researchers interested in establishing an integrated research approach
- Emphasizes solution methods for fixed points in non-linear problems such as variational inequalities, split feasibility, and hierarchical variational inequality problems that is particularly appropriate for engineering and core science applications

DESCRIPTION

Fixed Point Theory and Graph Theory provides an intersection between the theories of fixed point theorems that give the conditions under which maps (single or multivalued) have solutions and graph theory which uses mathematical structures to illustrate the relationship between ordered pairs of objects in terms of their vertices and directed edges.

This edited reference work is perhaps the first to provide a link between the two theories, describing not only their foundational aspects, but also the most recent advances and the fascinating intersection of the domains.

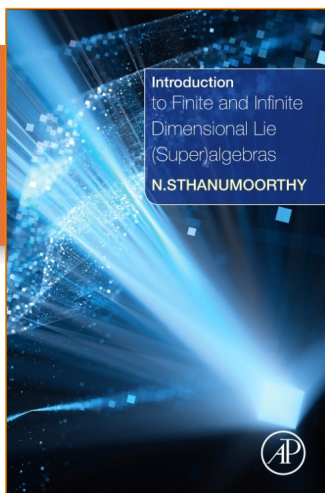
The authors provide solution methods for fixed points in different settings, with two chapters devoted to the solutions method for critically important non-linear problems in engineering, namely, variational inequalities, fixed point, split feasibility, and hierarchical variational inequality problems. The last two chapters are devoted to integrating fixed point theory in spaces with the graph and the use of retractions in the fixed point theory for ordered sets.

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Introduction
to Finite and Infinite
Dimensional Lie
(Super)algebras
N. STHANUMOORTHY

ISBN: 978-0-12-804675-3

PUB DATE: April 2016

FORMAT: Hardback

PAGES: c. 480

AUDIENCE

Upper graduate and postgraduate students interested in Lie algebras, Lie superalgebras, quantum groups, string theory, and mathematical physics.

Introduction to Finite and Infinite Dimensional Lie (Super)Algebras

Sthanumoorthy Neelacanta University of Madras, Chennai, India



Including numerous exercises and worked examples, this research monograph systematically describes the formal relationship between Lie Theory and other areas of mathematics and mathematical physics where lie algebras, superalgebras, and other related structures naturally arise

KEY FEATURES

- Discusses the fundamental structure and all root relationships of Lie algebras and Lie superalgebras and their finite and infinite dimensional representation theory
- Closely describes BKM Lie superalgebras, their different classes of imaginary root systems, their complete classifications, root-supermultiplicities, and related combinatorial identities
- Includes numerous tables of the properties of individual Lie algebras and Lie superalgebras
- Focuses on Kac-Moody algebras

DESCRIPTION

Lie superalgebras are a natural generalization of Lie algebras, having applications in geometry, number theory, gauge field theory, and string theory. *Introduction to Finite and Infinite Dimensional Lie Algebras and Superalgebras* introduces the theory of Lie superalgebras, their algebras, and their representations.

The material covered ranges from basic definitions of Lie groups to the classification of finite-dimensional representations of semi-simple Lie algebras. While discussing all classes of finite and infinite dimensional Lie algebras and Lie superalgebras in terms of their different classes of root systems, the book focuses on Kac-Moody algebras. With numerous exercises and worked examples, it is ideal for graduate courses on Lie groups and Lie algebras.

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The Gradient Test

Another Likelihood-Based Test

Artur Lemonte Department of Statistics, Federal University of Pernambuco, Recife/PE, Brazil



THE GRADIENT TEST

ANOTHER LIKELIHOOD-BASED TEST

ARTUR LEMONTE



ISBN: 978-0-12-803596-2

PUB DATE: February 2016

FORMAT: Paperback

PAGES: c. 142

AUDIENCE

The short book regarding the gradient test can be used for a graduate course. Additionally, it can be used by researchers who are interested in developing research in likelihood-based theory. The short book will link theory and practice and hence a lot of researchers of many areas can use the book as a reference for the gradient test.

This book provides a fast dissemination of the gradient test in statistics literature from around the world, presenting the latest information on this interesting alternative to the classical large-sample tests, namely the likelihood ratio (LR), Wald (W), and Rao score (S) tests

KEY FEATURES

- Covers the background of the gradient statistic and the different models
- Discusses The Bartlett-corrected gradient statistic
- Explains the algorithm to compute the gradient-type statistic

DESCRIPTION

The Gradient Test: Another Likelihood-Based Test presents the latest on the gradient test, a large-sample test that was introduced in statistics literature by George R. Terrell in 2002. The test has been studied by several authors, is simply computed, and can be an interesting alternative to the classical large-sample tests, namely, the likelihood ratio (LR), Wald (W), and Rao score (S) tests.

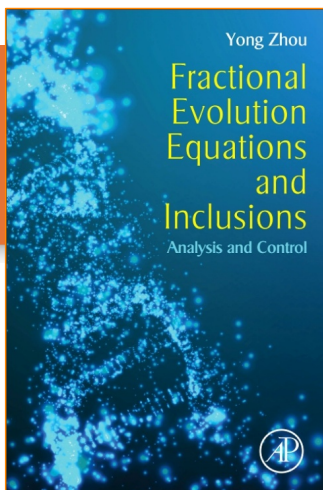
Due to the large literature about the LR, W and S tests, the gradient test is not frequently used to test hypothesis. The book covers topics on the local power of the gradient test, the Bartlett-corrected gradient statistic, the gradient statistic under model misspecification, and the robust gradient-type bounded-influence test.

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ISBN: 978-0-12-804277-9

PUB DATE: January 2016

FORMAT: Hardback

PAGES: c. 284

AUDIENCE

Researchers and graduate students working in research, seminars, and advanced graduate courses in pure and applied mathematics, physics, mechanics, engineering, biology, and other applied sciences.

Fractional Evolution Equations and Inclusions

Analysis and Control

Yong Zhou Faculty of Mathematics and Computer Sciences, Zhejiang Normal University, P.R. China.



Systematizes the theory of fractional evolution inclusions within control systems, with the aim of providing more accurate modeling applications in physical phenomena that can be described stochastically

KEY FEATURES

- Systematic analysis of existence theory and topological structure of solution sets for fractional evolution inclusions and control systems
- Differential models with fractional derivative provide an excellent instrument for the description of memory and hereditary properties, and their description and working will provide valuable insights into the modelling of many physical phenomena suitable for engineers and physicists
- The book provides the necessary background material required to go further into the subject and explore the rich research literature

DESCRIPTION

Fractional evolution inclusions are an important form of differential inclusions within nonlinear mathematical analysis. They are generalizations of the much more widely developed fractional evolution equations (such as time-fractional diffusion equations) seen through the lens of multivariate analysis. Compared to fractional evolution equations, research on the theory of fractional differential inclusions is however only in its initial stage of development.

This is important because differential models with the fractional derivative providing an excellent instrument for the description of memory and hereditary properties, and have recently been proved valuable tools in the modeling of many physical phenomena.

The fractional order models of real systems are always more adequate than the classical integer order models, since the description of some systems is more accurate when the fractional derivative is used. The advantages of fractional derivatization become evident in modeling mechanical and electrical properties of real materials, description of rheological properties of rocks and in various other fields. Such models are interesting for engineers and physicists as well as so-called pure mathematicians.

Phenomena investigated in hybrid systems with dry friction, processes of controlled heat transfer, obstacle problems and others can be described with the help of various differential inclusions, both linear and nonlinear.

Fractional Evolution Equations and Inclusions is devoted to a rapidly developing area of the research for fractional evolution equations & inclusions and their applications to control theory. It studies Cauchy problems for fractional evolution equations, and fractional evolution inclusions with Hille-Yosida operators. It discusses control problems for systems governed by fractional evolution equations. Finally it provides an investigation of fractional stochastic evolution inclusions in Hilbert spaces.

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Shen Liu James McGree Zongyuan Ge Yang Xie

Computational and Statistical Methods
for Analysing Big Data with Applications



ISBN: 978-0-12-803732-4

PUB DATE: November 2015

FORMAT: Hardback

PAGES: c. 194

AUDIENCE

Statisticians, mathematicians,
computational scientists

Computational and Statistical Methods for Analysing Big Data with Applications

Shen Liu Research Fellow, Queensland University of Technology, Australia

James McGree Queensland University of Technology, Australia

Zongyuan Ge Queensland University of Technology, Australia

Yang Xie



This book provides users with a comprehensive discussion on how to develop and implement advanced statistical and computational methodologies for use in five high-impact areas where big data is collected, including computer vision, geosciences, commerce, healthcare and transportation.

KEY FEATURES

- Advanced computational and statistical methodologies for analysing big data are developed.
- Experimental design methodologies are described and implemented to make the analysis of big data more computationally tractable.
- Case studies are discussed to demonstrate the implementation of the developed methods.
- Five high-impact areas of application are studied: computer vision, geosciences, commerce, healthcare and transportation.
- Computing code/programs are provided where appropriate.

DESCRIPTION

Due to the scale and complexity of data sets currently being collected in areas such as health, transportation, environmental science, engineering, information technology, business and finance, modern quantitative analysts are seeking improved and appropriate computational and statistical methods to explore, model and draw inferences from big data. This book aims to introduce suitable approaches for such endeavours, providing applications and case studies for the purpose of demonstration.

Computational and Statistical Methods for Analysing Big Data with Applications starts with an overview of the era of big data. It then goes onto explain the computational and statistical methods which have been commonly applied in the big data revolution. For each of these methods, an example is provided as a guide to its application. Five case studies are presented next, focusing on computer vision with massive training data, spatial data analysis, advanced experimental design methods for big data, big data in clinical medicine, and analysing data collected from mobile devices, respectively. The book concludes with some final thoughts and suggested areas for future research in big data.

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Numerical Solutions of
Three Classes of Nonlinear Parabolic
Integro-Differential Equations

Temur Jangveladze
Zurab Kiguradze
Beny Neta



Numerical Solutions of Three Classes of Nonlinear Parabolic Integro-Differential Equations

T Jangveladze Georgia Technical University, Tbilisi, Georgia

Z Kiguradze Tbilisi State University, Tbilisi, Georgia

Beny Neta Naval Postgraduate School, Monterey, CA, USA

This research monograph is devoted to three models of nonlinear partial integro-differential equations, suitable for the description of many physical problems which arise in electro-magnetic diffusion processes and heat flow in materials with memory

KEY FEATURES

- Investigations of the described equations include theoretical as well as approximation properties
- Detailed references enable further independent study
- Easily understandable proofs describe real-world processes with mathematical rigor

DESCRIPTION

This book describes three classes of nonlinear partial integro-differential equations. These models arise in electromagnetic diffusion processes and heat flow in materials with memory. Mathematical modeling of these processes is briefly described in the first chapter of the book. Investigations of the described equations include theoretical as well as approximation properties. Qualitative and quantitative properties of solutions of initial-boundary value problems are performed thereafter. All statements are given with easy understandable proofs. For approximate solution of problems different varieties of numerical methods are investigated. Comparison analyses of those methods are carried out. For theoretical results the corresponding graphical illustrations are included in the book. At the end of each chapter topical bibliographies are provided.

ISBN: 978-0-12-804628-9

PUB DATE: November 2015

FORMAT: Hardback

PAGES: c. 242

AUDIENCE

Scientists working in the field of nonlinear integro-differential models, mathematical physicists, and applied and numerical mathematicians, and also MS and PhD students of the appropriate specializations.

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A NEW CONCEPT FOR TUNING DESIGN WEIGHTS IN SURVEY SAMPLING

Jackknifing in Theory and Practice



Sarjinder Singh, Stephen A. Sedory,
Maria del Mar Rueda, Antonio Arcos,
Raghu Nath Arnab



ISBN: 978-0-08-100594-1

PUB DATE: November 2015

FORMAT: Hardback

PAGES: c. 300

AUDIENCE

Graduates undertaking a Ph.D. or MS in statistics especially in survey sampling. Govt. organizations and private organizations. All Survey Methodologists could benefit.

A New Concept for Tuning Design Weights in Survey Sampling

Jackknifing in Theory and Practice

Sarjinder Singh Texas A&M University – Kingsville, USA ; **Stephen A. Sedory** Associate Professor of Mathematics, Department of Mathematics, Texas A&M University-Kingsville, USA; **Maria Del Mar Rueda** University of Granada, Spain ; **Antonio Arcos** Assistant Professor of Statistics, University of Granada, Spain ; **Raghu Nath Arnab** Dept of Statistics, University of Botswana, Botswana



This book introduces a new statistical survey methodology that can be used to estimate population parameters, presenting three concepts for discussion, including calibration, jackknifing, and imputing where needed.

KEY FEATURES

- Explains how to calibrate design weights in survey sampling
- Discusses how Jackknifing is needed in design weights in survey sampling
- Describes how design weights are imputed in survey sampling

DESCRIPTION

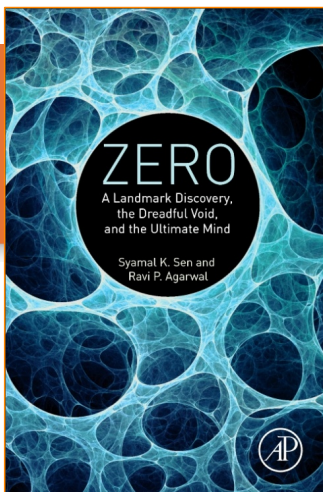
A New Concept for Tuning Design Weights in Survey Sampling: Jackknifing in Theory and Practice introduces the new concept of tuning design weights in survey sampling by presenting three concepts: calibration, jackknifing, and imputing where needed. This new methodology allows survey statisticians to develop statistical software for analyzing data in a more precisely and friendly way than with existing techniques.

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ISBN: 978-0-08-100774-7

PUB DATE: November 2015

FORMAT: Hardback

PAGES: c. 158

AUDIENCE

Students, researchers, and professors/teachers in any mathematical and computational sciences area such as Mathematics, Physics, Mathematical and Statistical Physics

Zero

A Landmark Discovery, the Dreadful Void, and the Ultimate Mind

Syamal K. Sen GVP-Prof. V. Lakshmikantham Institute for Advanced Studies, Visakhapatnam, India

Ravi P. Agarwal Department of Mathematics, Texas A&M University-Kingsville, USA



The theory and history of zero in mathematics

KEY FEATURES

- Introduces the history of the value of zero and why it was a landmark discovery
- Discusses how zero is used in science and engineering and its use in different countries
- Explains how zero affects different mathematics and calculus

DESCRIPTION

Zero indicates the absence of a quantity or a magnitude. It is so deeply rooted in our psyche today that nobody will possibly ask "What is zero?" From the beginning of the very creation of life, the feeling of lack of something or the vision of emptiness/void has been embedded by the creator in all living beings. While recognizing different things as well as the absence of one of these things are easy, it is not so easy to fathom the complete nothingness viz. the universal void. Although we have a very good understanding of nothingness or, equivalently, a zero today, our forefathers had devoted countless hours and arrived at the representation and integration of zero and its compatibility not only with all non-zero numbers but also with all conceivable environments only after many painstaking centuries. Zero can be viewed/perceived in two distinct forms: (i) as a number in our mundane affairs and (ii) as the horrific void or Absolute Reality in the spiritual plane/the ultimate state of mind.

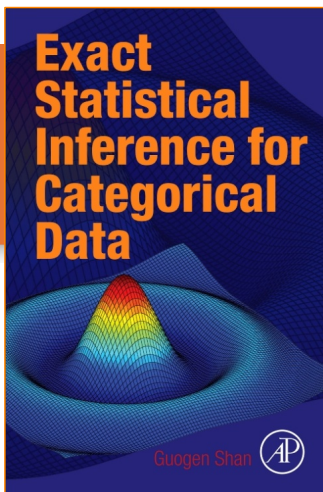
Presented are the reasons why zero is a landmark discovery and why it has the potential to conjure up in an intense thinker the dreadful nothingness unlike those of other numbers such as 1, 2, and 3. Described are the representation of zero and its history including its deeper understanding via calculus, its occurrences and various roles in different countries as well as in sciences/engineering along with a stress on the Indian zero that is accepted as the time-invariant unique absolute zero. This is followed by the significant distinction between mathematics and computational mathematics and the concerned differences between the unique absolute zero and non-unique relative numerical zeros and their impact and importance in computations on a digital computer.

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ISBN: 978-0-08-100681-8

PUB DATE: October 2015

FORMAT: Paperback

PAGES: c. 54

AUDIENCE

Researchers from pharmaceutical companies, research universities and institutes and students who are interested in categorical data analysis

Exact Statistical Inference for Categorical Data

Guogen Shan University of Nevada, Las Vegas, NV, USA



This book provides a comprehensive study on how exact inference can be used to analyze data and the advantages it has over other approaches, introducing both conditional and unconditional exact approaches for the data in 2 by 2 or 2 by k contingency tables.

KEY FEATURES

- Demonstrates how exact inference can be used to analyze data in 2 by 2 tables
- Discusses the analysis of data in 2 by k tables using exact inference
- Explains how exact inference can be used in genetics

DESCRIPTION

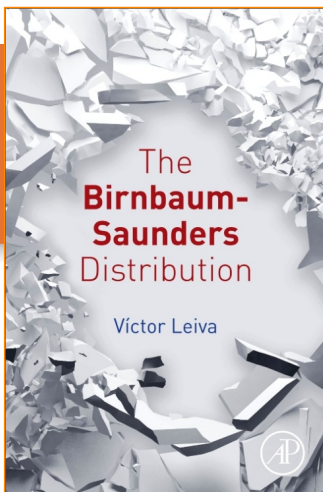
Exact Statistical Inference for Categorical Data discusses the way asymptotic approaches have been often used in practice to make statistical inference. This book introduces both conditional and unconditional exact approaches for the data in 2 by 2, or 2 by k contingency tables, and is an ideal reference for users who are interested in having the convenience of applying asymptotic approaches, with less computational time. In addition to the existing conditional exact inference, some efficient, unconditional exact approaches could be used in data analysis to improve the performance of the testing procedure.

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ISBN: 978-0-12-803769-0

PUB DATE: October 2015

FORMAT: Paperback

PAGES: c. 138

AUDIENCE

Graduate engineering students,
practicing engineers, quality
engineers, reliability engineers,
consultants

The Birnbaum-Saunders Distribution

Victor Leiva Faculty of Engineering and Sciences, Adolfo Ibáñez University,
Chile



This book provides a comprehensive review of the statistical theory, methodology, and applications of the Birnbaum-Distribution, presenting information on a very flexible distribution for modeling different types of data (mainly lifetime data).

KEY FEATURES

- Introduces inference in the Birnbaum-Saunders distribution
- Provides a comprehensive review of the statistical theory and methodology of the Birnbaum-Distribution
- Discusses different applications of the Birnbaum-Saunders distribution
- Explains characterization and the lifetime analysis

DESCRIPTION

The Birnbaum-Saunders Distribution presents the statistical theory, methodology, and applications of the Birnbaum-Saunders distribution, a very flexible distribution for modeling different types of data (mainly lifetime data).

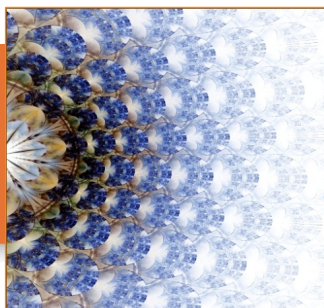
The book describes the most recent theoretical developments of this model, including properties, transformations and related distributions, lifetime analysis, and shape analysis. It discusses methods of inference based on uncensored and censored data, goodness-of-fit tests, and random number generation algorithms for the Birnbaum-Saunders distribution, also presenting existing and future applications.

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LOCAL FRACTIONAL INTEGRAL TRANSFORMS AND THEIR APPLICATIONS

Xiao-Jun Yang
Dumitru Baleanu
H. M. Srivastava



ISBN: 978-0-12-804002-7

PUB DATE: October 2015

FORMAT: Hardback

PAGES: c. 250

AUDIENCE

Scientists and engineers in the fields of mathematics, physics, chemistry and engineering, senior undergraduate and graduate students

Local Fractional Integral Transforms and Their Applications

Xiao Jun Yang Department of Mathematics and Mechanics, China University of Mining and Technology, People's Republic of China

Dumitru Baleanu Department of Mathematics and Computer Sciences, Faculty of Arts and Sciences, Cankaya University, Turkey

H. M. Srivastava University of Victoria, Victoria, British Columbia, Canada University of Victoria, BC, Canada



The book explains the basics of the local fractional derivative operators and investigates new results in the area of local integral transforms, describing the numerous widespread real-world phenomena in the fields of physical sciences and engineering sciences that involve non-differentiable behaviors.

KEY FEATURES

- Provides applications of local fractional Fourier Series
- Discusses definitions for local fractional Laplace transforms
- Explains local fractional Laplace transforms coupled with analytical methods

DESCRIPTION

Local Fractional Integral Transforms and Their Applications provides information on how local fractional calculus has been successfully applied to describe the numerous widespread real-world phenomena in the fields of physical sciences and engineering sciences that involve non-differentiable behaviors. The methods of integral transforms via local fractional calculus have been used to solve various local fractional ordinary and local fractional partial differential equations and also to figure out the presence of the fractal phenomenon. The book presents the basics of the local fractional derivative operators and investigates some new results in the area of local integral transforms.

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**Boundary Value Problems
for Systems of Differential,
Difference and Fractional
Equations
Positive Solutions**

Johnny Henderson
and Rodica Luca

ISBN: 978-0-12-803652-5

PUB DATE: October 2015

FORMAT: Paperback

PAGES: c. 308

AUDIENCE

Graduate students and research
faculty at universities

Boundary Value Problems for Systems of Differential, Difference and Fractional Equations

Positive Solutions

Johnny Henderson Department of Mathematics, Baylor University, Waco, Texas,
USA

Rodica Luca Department of Mathematics, "Gheorghe Asachi" Technical University
of Iasi, Romania



ELSEVIER

This book provides a comprehensive description of recent developments in the theory of positive solutions for boundary value problems as written by two of the world's leading researchers who discuss these differential equations that brings together a set of additional constraints called the boundary conditions.

KEY FEATURES

- Explains the systems of second order and higher orders differential equations with integral and multi-point boundary conditions
- Discusses second order difference equations with multi-point boundary conditions
- Introduces Riemann-Liouville fractional differential equations with uncoupled and coupled integral boundary conditions

DESCRIPTION

Boundary Value Problems for Systems of Differential, Difference and Fractional Equations: Positive Solutions discusses the concept of a differential equation that brings together a set of additional constraints called the boundary conditions.

As boundary value problems arise in several branches of math given the fact that any physical differential equation will have them, this book will provide a timely presentation on the topic. Problems involving the wave equation, such as the determination of normal modes, are often stated as boundary value problems.

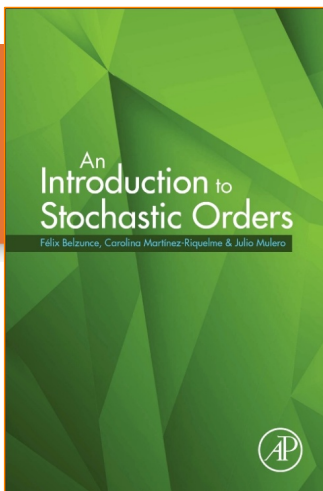
To be useful in applications, a boundary value problem should be well posed. This means that given the input to the problem there exists a unique solution, which depends continuously on the input. Much theoretical work in the field of partial differential equations is devoted to proving that boundary value problems arising from scientific and engineering applications are in fact well-posed.

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ISBN: 978-0-12-803768-3

PUB DATE: September 2015

FORMAT: Paperback

PAGES: c. 158

AUDIENCE

Graduate students, PhD students
and researchers in probability and
statistics

An Introduction to Stochastic Orders

Felix Belzunce University of Murcia, Spain

Carolina Martínez Riquelme University of Murcia, Spain

Julio Mulero University of Alicante, Spain



This book provides a comprehensive introduction to the theory and applications of the comparison of random quantities in a probabilistic sense, presenting a powerful tool that can be used in comparing probabilistic models in different areas such as reliability, survival analysis, risks, finance, and economics.

KEY FEATURES

- Introduces stochastic orders and its notation
- Discusses different orders of univariate stochastic orders
- Explains multivariate stochastic orders and their convex, likelihood ratio, and dispersive orders

DESCRIPTION

An Introduction to Stochastic Orders discusses this powerful tool that can be used in comparing probabilistic models in different areas such as reliability, survival analysis, risks, finance, and economics. The book provides a general background on this topic for students and researchers who want to use it as a tool for their research.

In addition, users will find detailed proofs of the main results and applications to several probabilistic models of interest in several fields, and discussions of fundamental properties of several stochastic orders, in the univariate and multivariate cases, along with applications to probabilistic models.

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ISBN: 978-0-08-100644-3

PUB DATE: September 2015

FORMAT: Paperback

PAGES: c. 158

AUDIENCE

Scientists and engineers in the fields of mathematics, physics, chemistry and engineering

Derivative with a New Parameter

Theory, Methods and Applications

Abdon Atangana University of the Free State, Bloemfontein South Africa



This book provides a thorough introduction to newly-established local derivatives and their new parameters, also including their integral transforms and applications, and covering the definition of beta-Laplace transforms, beta-Sumudu transforms, and beta-Fourier transforms, and their properties.

KEY FEATURES

- Introduce the new parameters for the local derivative, including its definition and properties
- Provides examples on how local derivatives with a new parameter can be used to model different applications, such as groundwater flow and different diseases
- Includes definitions of beta-Laplace transforms, beta-Sumudu transforms, and beta-Fourier transforms, their properties, and methods for partial differential using beta derivatives
- Explains how the new parameter can be used in multiple methods

DESCRIPTION

Derivative with a New Parameter: Theory, Methods and Applications discusses the first application of the local derivative that was done by Newton for general physics, and later for other areas of the sciences.

The book starts off by giving a history of derivatives, from Newton to Caputo. It then goes on to introduce the new parameters for the local derivative, including its definition and properties. Additional topics define beta-Laplace transforms, beta-Sumudu transforms, and beta-Fourier transforms, including their properties, and then go on to describe the method for partial differential with the beta derivatives.

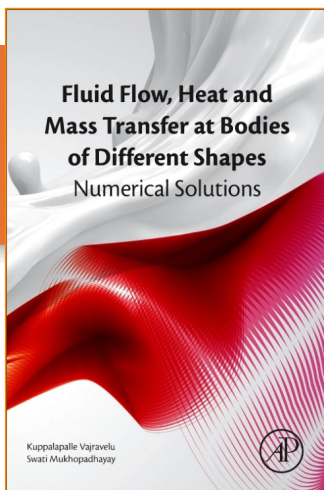
Subsequent sections give examples on how local derivatives with a new parameter can be used to model different applications, such as groundwater flow and different diseases. The book gives an introduction to the newly-established local derivative with new parameters, along with their integral transforms and applications, also including great examples on how it can be used in epidemiology and groundwater studies.

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ISBN: 978-0-12-803733-1

PUB DATE: September 2015

FORMAT: Hardback

PAGES: c. 190

AUDIENCE

Researchers and PhD students working in applied mathematics and applied mathematicians working on fluids and materials and mathematical physics. The book is also aimed at theoretical physicists and engineers

Fluid Flow, Heat and Mass Transfer at Bodies of Different Shapes

Numerical Solutions

Kuppalapalle Vajravelu Professor of Mathematics, University of Central Florida, Orlando, USA

Swati Mukhopadhyay Assistant Professor of Mathematics, University of Burdwan, West Bengal, India



Provides up-to-date developments on numerical methods and their application to science and engineering problems

KEY FEATURES

- Addresses basic concepts to understand the theoretical framework for the method
- Provides examples of nonlinear problems that have been solved through the use of numerical method
- Focuses on fluid flow problems governed by nonlinear equations

DESCRIPTION

Most of the equations governing the problems related to science and engineering are nonlinear in nature. As a result, they are inherently difficult to solve. Analytical solutions are available only for some special cases. For other cases, one has no easy means but to solve the problem must depend on numerical solutions.

Fluid Flow, Heat and Mass Transfer at Bodies of Different Shapes: Numerical Solutions presents the current theoretical developments of boundary layer theory, a branch of transport phenomena. Also, the book addresses the theoretical developments in the area and presents a number of physical problems that have been solved by analytical or numerical method. It is focused particularly on fluid flow problems governed by nonlinear differential equations. The book is intended for researchers in applied mathematics, physics, mechanics and engineering.

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THEORY AND METHODS OF STATISTICS

P. K. Bhattacharya, Prabir Burman



ISBN: 978-0-12-802440-9

PUB DATE: June 2016

FORMAT: Paperback

PAGES: c. 600

AUDIENCE

Graduate (Masters/PhD) students
and research statisticians.

Theory and Methods of Statistics

P.K. Bhattacharya Professor Emeritus, Department of Statistics, University of California, Davis, Davis, CA, USA

Prabir Burman Professor, Department of Statistics, University of California, Davis, Davis, CA, USA



A comprehensive treatment of foundational statistics, probability theory, linear models, and related special topics, including many probability inequalities useful for investigating convergence of statistical procedures

KEY FEATURES

- Codifies foundational information in many core areas of statistics into a comprehensive and definitive resource
- Serves as an excellent text for select master's and PhD programs, as well as a professional reference
- Integrates numerous examples to illustrate advanced concepts
- Includes many probability inequalities useful for investigating convergence of statistical procedures

DESCRIPTION

Theory and Methods of Statistics covers essential topics for advanced graduate students and professional research statisticians. This comprehensive resource covers many important areas in one manageable volume, including core subjects such as probability theory, mathematical statistics, and linear models, and various special topics, including nonparametrics, curve estimation, multivariate analysis, time series, and resampling. The book presents subjects such as "maximum likelihood and sufficiency," and is written with an intuitive, heuristic approach to build reader comprehension. It also includes many probability inequalities that are not only useful in the context of this text, but also as a resource for investigating convergence of statistical procedures.

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Semi-Markov Models

Control of Restorable Systems with Latent Failures



Yuriy Obzherin
Elena Boyko



ISBN: 978-0-12-802212-2

PUB DATE: February 2015

FORMAT: Paperback

PAGES: c. 198

AUDIENCE

Researchers and students in mathematical modeling, professionals in the field of control of technological processes in instrument making, mechanical engineering, automotive industry and other branches.

Semi-Markov Models

Control of Restorable Systems with Latent Failures

Yuriy E Obzherin Head of the Department of Higher Mathematics
Sevastopol State University, Sevastopol, Russia

Elena G Boyko Associate Professor, Department of Higher Mathematics
Sevastopol State University, Sevastopol, Russia



Modeling a wide class of systems using SMP with a common phase space of states.

"The book can be recommended to readers interested in building mathematical models for control strategies in engineering systems and technological processes."--**Zentralblatt MATH, *Semi-Markov Models***

KEY FEATURES

- Reflects the possibility and effectiveness of this method of modeling systems, such as phase merging algorithms developed by V.S. Korolyuk, A.F. Turbin, A.V. Swishchuk, little covered elsewhere
- Focuses on possible applications to engineering control systems

DESCRIPTION

Featuring previously unpublished results, *Semi-Markov Models: Control of Restorable Systems with Latent Failures* describes valuable methodology which can be used by readers to build mathematical models of a wide class of systems for various applications. In particular, this information can be applied to build models of reliability, queuing systems, and technical control.

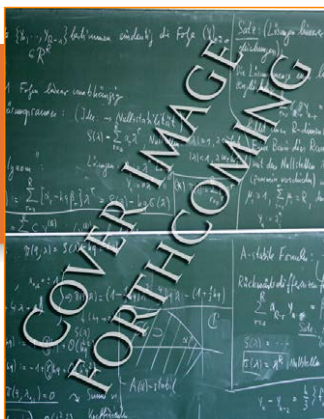
Beginning with a brief introduction to the area, the book covers semi-Markov models for different control strategies in one-component systems, defining their stationary characteristics of reliability and efficiency, and utilizing the method of asymptotic phase enlargement developed by V.S. Korolyuk and A.F. Turbin. The work then explores semi-Markov models of latent failures control in two-component systems. Building on these results, solutions are provided for the problems of optimal periodicity of control execution. Finally, the book presents a comparative analysis of analytical and imitational modeling of some one- and two-component systems, before discussing practical applications of the results

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Factorization Method for Boundary Value Problems by Invariant Unembedding

Jacques Henry Research Director, INRIA, Bordeaux, France

A. M. Ramos Associate Professor, Department of Applied Mathematics, Complutense University of Madrid, Spain



KEY FEATURES

- Develops the invariant embedding technique for boundary value problems
- Makes a link between control theory, boundary value problems and the Gauss factorization

DESCRIPTION

The book presents a new theory for linear elliptic boundary value problems. The authors provide a transformation of the problem in two initial value problems that are uncoupled, enabling you to solve these successively. This method appears similar to the Gauss block factorization of the matrix, obtained in finite dimension after discretization of the problem. This proposed method is comparable to the computation of optimal feedbacks for linear quadratic control problems.

ISBN: 978-1-78548-143-7

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 190

AUDIENCE

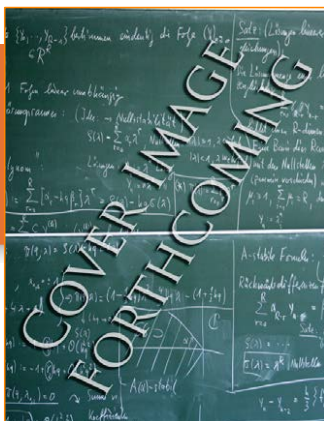
Researchers and academics working in the subjects of partial differential equations, numerical analysis, control theory.

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Linear Programming

Jouhaina Chaouachi Associate Professor at IHEC Carthage – ECSTRA
Laboratory, Tunis, Tunisia

Molka Siala Ghorbel Assistant Professor at IHEC Carthage, Tunisia



Covering the essentials as well as applications in fields such as operations research and management, this practical guide features handy examples and exercises for modeling and solving a range of linear optimization problems

KEY FEATURES

- Features proven methods applied to economic problems
- Includes definitions and didactic examples
- Provides exercises with detailed corrections
- Serves as a valuable tool for students, researchers, and academics seeking to understand the fundamentals of linear programming and its many applications

DESCRIPTION

Linear Programming is a must-have guide for students, researchers, and academics seeking to understand the fundamentals of linear programming, as well as its many applications. Operations research involves the use of management skills, knowledge of the economy, and mathematical application. Linear programming lies at the heart of operations research and is a valuable tool for modeling and solving linear optimization problems.

This book covers the essential elements of linear programming, including modeling management situations in diverse contexts. Features definitions, didactical examples, and exercises with detailed correction. The author provides easy-to-follow mathematical formulations of an economic problem and describes how to use the tools of linear programming to solve it. The economic interpretation of the obtained results is also included.

ISBN: 978-1-78548-151-2

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 240

AUDIENCE

Students, academics, professionals
and researchers in the field of
computer science, engineering,
operational research

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Uncertainty Quantification and Stochastic Modeling with Matlab

Eduardo Souza de Cursi Professor, National Institute for Applied Sciences, Rouen, France

Rubens Sampaio Professor, PUC-Rio, Rio de Janeiro, Brazil



Uncertainty Quantification and Stochastic Modeling with Matlab®

Eduardo Souza de Cursi
Rubens Sampaio



ISBN: 978-1-78548-005-8

PUB DATE: late March 2015

FORMAT: Hardback

PAGES: c. 442

AUDIENCE

Researchers, graduate students at universities in mathematics, physics, engineering and natural sciences fields

Learn to characterize the effect of uncertainty on numerical models in real-world applications

KEY FEATURES

- Discusses the main ideas of Stochastic Modeling and Uncertainty Quantification using Functional Analysis
- Details listings of Matlab® programs implementing the main methods which complete the methodological presentation by a practical implementation
- Construct your own implementations from provided worked examples

DESCRIPTION

Uncertainty Quantification (UQ) is a relatively new research area which describes the methods and approaches used to supply quantitative descriptions of the effects of uncertainty, variability and errors in simulation problems and models. It is rapidly becoming a field of increasing importance, with many real-world applications within statistics, mathematics, probability and engineering, but also within the natural sciences.

Literature on the topic has up until now been largely based on polynomial chaos, which raises difficulties when considering different types of approximation and does not lead to a unified presentation of the methods. Moreover, this description does not consider either deterministic problems or infinite dimensional ones.

This book gives a unified, practical and comprehensive presentation of the main techniques used for the characterization of the effect of uncertainty on numerical models and on their exploitation in numerical problems. In particular, applications to linear and nonlinear systems of equations, differential equations, optimization and reliability are presented. Applications of stochastic methods to deal with deterministic numerical problems are also discussed. Matlab® illustrates the implementation of these methods and makes the book suitable as a textbook and for self-study.

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ENVIRONMENTAL MATERIALS AND WASTE

Resource Recovery and Pollution Prevention



M. N. V. Prasad & Kaimin Shih



ISBN: 978-0-12-803837-6

PUB DATE: June 2016

FORMAT: Paperback

PAGES: c. 740

AUDIENCE

Environmental Scientists, Material
Scientists, Chemists, Mineral
Geologists, Entrepreneurs

Environmental Materials and Waste

Resource Recovery and Pollution Prevention

Edited by: **M.N.V Prasad** Professor, Department of Plant Sciences,
University of Hyderabad, India

Kaimin Shih Associate Professor, Department of Civil Engineering,
University of Hong Kong, Hong Kong, China



This comprehensive book provides a multidisciplinary audience foundational knowledge of the naturally resulting by-products from industrial production, helping to facilitate new approaches to reducing their negative impact on the environment and highlighting the necessity of environmental sustainability to combat the effects of global warming and growing populations and economies

KEY FEATURES

- Presents a state-of-the-art guide to environmental sustainability
- Provides an overview of the field highlighting recent and emerging issues in environmental resource recovery that cover a wide array of by-products for remanufacture potential
- Details a multidisciplinary approach to fully realize the number of by-products which can be remanufactured, providing the foundation needed across disciplines to tackle these global issues

DESCRIPTION

Environmental Materials and Waste: Resource Recovery and Pollution Prevention contains the latest information on environmental sustainability as a wide variety of natural resources are increasingly being exploited to meet the demands of a worldwide growing population and economy.

These raw materials cannot, or can only partially, be substituted by renewable resources within the next few decades. As such, the efficient recovery and processing of mineral and energy resources, as well as recycling such resources, is now of significant importance.

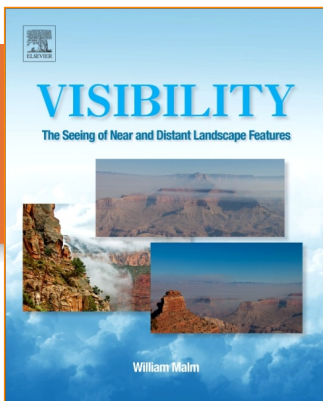
The book takes a multidisciplinary approach to fully realize the number of by-products which can be remanufactured, providing the foundation needed across disciplines to tackle this issue. As awareness and opportunities to recover valuable resources from process and bleed streams is gaining interest, sustainable recovery of environmental materials, including wastewater, offers tremendous opportunity to combine profitable and sustainable production.

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ISBN: 978-0-12-804450-6

PUB DATE: March 2016

FORMAT: Paperback

PAGES: c. 336

AUDIENCE

Environmental Scientists, Air management professionals, Environmental Protection professionals, Landscape Preservation professionals, policy makers

Visibility

The Seeing of Near and Distant Landscape Features

William Malm Research Scientist & Scholar, National Park Service - Colorado State University, Fort Collins, CO, USA



Written by a pioneer in this field, this highly illustrated new work on visibility concepts provides new tools and the latest research on measuring and quantifying air quality as it relates to scenic landscape features, including discussions of perception questions, visibility metrics, and the history of visibility regulatory development

KEY FEATURES

- Heavily illustrated to convey the concepts introduced, then followed by more mathematical coverage of the topic
- Covers all aspects of visibility, including science, social, and regulatory
- Expands traditional US only coverage of visibility and scenic to global

DESCRIPTION

Visibility: The Seeing of Near and Distant Landscape Features reviews the science of visibility from how to measure it quantitatively to its impacts by one of the foremost experts in the field. Carefully designed pedagogy allows a diversity of readers, from regulators to researchers to use this book to further their understanding of the field.

Topics covered include the interaction of light with the atmosphere and aerosols, the transfer of light through the atmosphere especially as it relates to non-uniform haze layers, perception questions, including visibility metrics, image processing techniques for purposes of visually displaying effects of haze on scenic landscapes, visibility monitoring techniques, and the history of visibility regulatory development.

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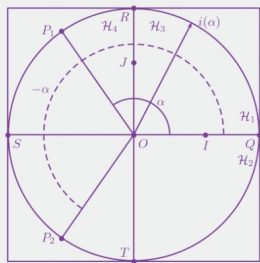
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Second Edition

GEOMETRY *with* TRIGONOMETRY



Patrick D. Barry

WP

ISBN: 978-0-12-805066-8

PREVIOUS EDITION ISBN:
978898563693

PUB DATE: November 2015

FORMAT: Hardback

PAGES: c. 264

AUDIENCE

A reference for second year students in Plane Euclidean Geometry and many audiences across classical applied mathematics.

Geometry with Trigonometry, 2e

Patrick D Barry National University of Ireland, Ireland



An account at once accessible and unobtrusively rigorous, intended to consolidate traditional synthetic geometry with progression into coordinates, trigonometry, position-vectors and complex numbers

KEY FEATURES

- Provides a modern and coherent exposition of geometry with trigonometry for many audiences across mathematics
- Provides many geometric diagrams for a clear understanding of the text and includes problem exercises for many chapters
- Generalizations of this material, such as to solid euclidean geometry and conic sections, when combined with calculus, would lead to applications in science, engineering, and elsewhere

DESCRIPTION

Geometry with Trigonometry Second Edition is a second course in plane Euclidean geometry, second in the sense that many of its basic concepts will have been dealt with at school, less precisely. It gets underway with a large section of pure geometry in Chapters 2 to 5 inclusive, in which many familiar results are efficiently proved, although the logical frame work is not traditional. In Chapter 6 there is a convenient introduction of coordinate geometry in which the only use of angles is to handle the perpendicularity or parallelism of lines. Cartesian equations and parametric equations of a line are developed and there are several applications. In Chapter 7 basic properties of circles are developed, the mid-line of an angle-support, and sensed distances. In the short Chapter 8 there is a treatment of translations, axial symmetries and more generally isometries. In Chapter 9 trigonometry is dealt with in an original way which e.g. allows concepts such as clockwise and anticlockwise to be handled in a way which is not purely visual. By the stage of Chapter 9 we have a context in which calculus can be developed. In Chapter 10 the use of complex numbers as coordinates is introduced and the great conveniences this notation allows are systematically exploited. Many and varied topics are dealt with, including sensed angles, sensed area of a triangle, angles between lines as opposed to angles between co-initial half-lines (duo-angles). In Chapter 11 various convenient methods of proving geometrical results are established, position vectors, areal coordinates, an original concept mobile coordinates. In Chapter 12 trigonometric functions in the context of calculus are treated.

New to this edition:

- The second edition has been comprehensively revised over three years
- Errors have been corrected and some proofs marginally improved
- The substantial difference is that Chapter 11 has been significantly extended, particularly the role of mobile coordinates, and a more thorough account of the material is given

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Biomagnetic Monitoring of Particulate Matter In the Indo-Burma Hotspot Region

Prabhat K. Rai

ISBN: 978-0-12-805135-1

PUB DATE: November 2015

FORMAT: Paperback

PAGES: c. 206

AUDIENCE

Air Pollution Science Researchers;
Industrialists; NGOs, Urban Forestry
professionals and policy makers,
Environmental Scientists

Biomagnetic Monitoring of Particulate Matter

In the Indo-Burma Hotspot Region

Prabhat Rai Assistant Professor, Department of Environmental Science,
Mizoram University, Aizawl, India



A review of biomagnetic monitoring along with real case examples of biomagnetic monitoring of tropical vegetation in this conservation hot spot

KEY FEATURES

- Bio-magnetic Monitoring of Particulate Matter gives a comprehensive overview of the issue of particulate pollution and monitoring
- Cases of magnetic biomonitoring across different environments are included to demonstrate this emerging technique as a way to measure particulate pollution
- Coverage includes a comparison to other techniques as well as why it works well ecological diverse developing areas which are data scarce, like the Indo-Burma Hot Spot
- A review of the detrimental health impacts of Particulate Matter reinforces the importance for this type of data to be available universally

DESCRIPTION

Air pollution originating from rapid industrialization, urbanization, population growth and economic development has disturbed the urban ecosystems of ecologically sensitive regions like the Indo-Burma hot spot, and they are under severe air pollution stress with limited resources to collect data on what is happening. Air pollutants comprised of both particulate matter (PM) and gaseous pollutants may cause adverse health effects in human, affect plant life and impact the global environment by changing the atmosphere of the earth. It is now well established that urban PM may also contain magnetic particles along with other air pollutants. Biomonitoring of PM through magnetic properties, known as biomagnetic monitoring, measures the magnetic parameters of dust loaded plant leaves, giving a new opportunity to monitor. Compared to existing conventional technologies, biomagnetic monitoring is an eco-friendly technique perfect in urban areas.

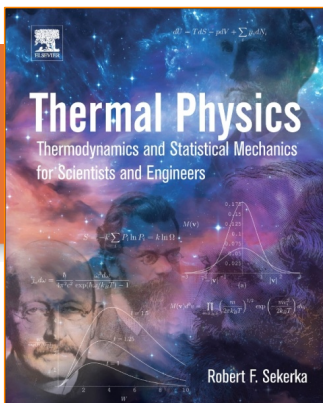
Biomagnetic Monitoring of Particulate Matter reviews the issues with PM and the potential of these methods to on tropical vegetation on a variety of flora which represent the biodiversity of the Indo-Burma Hot Spot.

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ISBN: 978-0-12-803304-3

PUB DATE: August 2015

FORMAT: Paperback

PAGES: c. 594

AUDIENCE

Advanced undergraduate and graduate students in physics and chemical and engineering sciences; researchers in academia and industry working in these areas

Thermal Physics

Thermodynamics and Statistical Mechanics for Scientists and Engineers

Robert Floyd Sekerka University Professor Emeritus, Physics and Mathematics, Carnegie Mellon University, Pittsburgh, PA, USA



A comprehensive exposition of thermodynamics and statistical mechanics serving as a complete single source for thermal science.

KEY FEATURES

- Includes applications of interest to physicists, physical chemists, and materials scientists, as well as materials, chemical, and mechanical engineers
- Suitable as a textbook for advanced undergraduates, graduate students, and practicing researchers
- Develops content systematically with increasing order of complexity
- Self-contained, including nine appendices to handle necessary background and technical details

DESCRIPTION

In *Thermal Physics: Thermodynamics and Statistical Mechanics for Scientists and Engineers*, the fundamental laws of thermodynamics are stated precisely as postulates and subsequently connected to historical context and developed mathematically. These laws are applied systematically to topics such as phase equilibria, chemical reactions, external forces, fluid-fluid surfaces and interfaces, and anisotropic crystal-fluid interfaces.

Statistical mechanics is presented in the context of information theory to quantify entropy, followed by development of the most important ensembles: microcanonical, canonical, and grand canonical. A unified treatment of ideal classical, Fermi, and Bose gases is presented, including Bose condensation, degenerate Fermi gases, and classical gases with internal structure. Additional topics include paramagnetism, adsorption on dilute sites, point defects in crystals, thermal aspects of intrinsic and extrinsic semiconductors, density matrix formalism, the Ising model, and an introduction to Monte Carlo simulation.

Throughout the book, problems are posed and solved to illustrate specific results and problem-solving techniques.

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Statistical Thermodynamics of Semiconductor Alloys

VYACHESLAV A. ELYUKHIN



ISBN: 978-0-12-803987-8

PUB DATE: January 2016

FORMAT: Paperback

PAGES: c. 212

AUDIENCE

Postgraduate students and researchers in academia and industry working on solid state physics and semiconductors

Statistical Thermodynamics of Semiconductor Alloys

Vyacheslav A Elyukhin The Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV-IPN), Mexico City, Mexico



This comprehensive reference outlines the fundamental physics that is indispensable for a deep understanding of the thermodynamic properties and characteristics of crystalline semiconductor alloys, using the methods of statistical thermodynamics.

KEY FEATURES

- Includes a complete and detailed consideration of the cluster variation method (CVM)
- Provides descriptions of spinodal decomposition ranges of crystalline alloys
- Presents a representation of thermodynamics characteristics and properties as a miscibility gap by using the different approximations of CVM
- Covers a unique, detailed consideration of the valence force field model with the complete collection of formulas

DESCRIPTION

Statistical Thermodynamics of Semiconductor Alloys is the consideration of thermodynamic properties and characteristics of crystalline semiconductor alloys by the methods of statistical thermodynamics. The topics presented in this book make it possible to solve such problems as calculation of a miscibility gap, a spinodal decomposition range, a short-range order, deformations of crystal structure, and description of the order-disorder transitions.

Semiconductor alloys, including doped elemental semiconductors are the basic materials of solid-state electronics. Their structural stability and other characteristics are key to determining the reliability and lifetime of devices, making the investigation of stability conditions an important part of semiconductor physics, materials science, and engineering. This book is a guide to predicting and studying the thermodynamic properties and characteristics of the basic materials of solid-state electronics.

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HANDBOOK OF SURFACE SCIENCE VOLUME 9
SERIES EDITOR:
ALEXEI A. MARADUDIN

Magnetism of Surfaces, Interfaces, and Nanoscale Materials

Edited by
Robert Camley,
Zbigniew Celinski,
Robert Stamps



ISBN: 978-0-444-62634-9

PUB DATE: October 2015

FORMAT: Hardback

PAGES: c. 466

AUDIENCE

Undergraduate and graduate students in Physics and Engineering as well as professionals in research and development and research professors and post-doctoral scientists

Magnetism of Surfaces, Interfaces, and Nanoscale Materials

Edited by: **Robert E. Camley** Department of Physics & Energy Science, University of Colorado at Colorado Springs, CO, USA

Zbigniew Celinski Department of Physics & Energy Science, University of Colorado at Colorado Springs, CO, USA

Robert L. Stamps School of Physics & Astronomy, University of Glasgow, UK



This book provides a comprehensive view of the research at the forefront of magnetism that is continually expanding its reach through theory and experimentation. It brings a much needed work on magnetic surfaces and interfaces, an exciting and rapidly developing field indispensable for a new generation of storage devices

A Volume in the Handbook of Surface Science Series.

KEY FEATURES

- Addresses both theory and experiment that are vital for gaining an essential understanding of topics at the interface between magnetism and materials science
- Chapters written by experts provide great insights into complex material
- Discusses fundamental background material and state-of-the-art applications, serving as an indispensable guide for students and professionals at all levels of expertise
- Stresses interdisciplinary aspects of the field, including physics, chemistry, nanocharacterization, and materials science
- Combines basic materials with applications, thus widening the scope of the book and its readership

DESCRIPTION

In the past 30 years, magnetic research has been dominated by the question of how surfaces and interfaces influence the magnetic and transport properties of nanostructures, thin films and multilayers. The research has been particularly important in the magnetic recording industry where the giant magnetoresistance effect led to a new generation of storage devices including hand-held memories such as those found in the ipod. More recently, transfer of spin angular momentum across interfaces has opened a new field for high frequency applications.

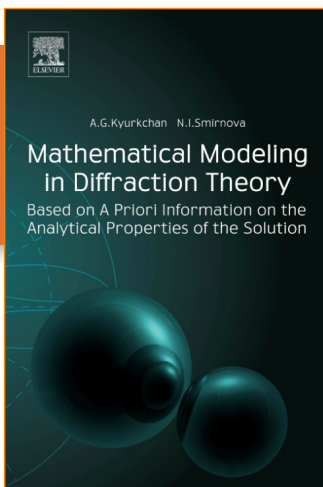
This book gives a comprehensive view of research at the forefront of these fields. The frontier is expanding through dynamic exchange between theory and experiment. Contributions have been chosen to reflect this, giving the reader a unified overview of the topic.

PHYSICS

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ISBN: 978-0-12-803728-7

PUB DATE: September 2015

FORMAT: Paperback

PAGES: c. 268

AUDIENCE

Researchers, scientists and graduate students in the field of radio physics, acoustics, optics, radio astronomy, biophysics, geophysics, astrophysics, and mathematical physics

Mathematical Modeling in Diffraction Theory Based on A Priori Information on the Analytical Properties of the Solution

Alexander G. Kyurkchan Department of Probability Theory and Applied Mathematics, Moscow Technical University of Communication and Informatics, Moscow, Russia

Nadezhda I. Smirnova Department of Probability Theory and Applied Mathematics, Moscow Technical University of Communication and Informatics, Moscow, Russia



This book provides a comprehensive reference on the fundamental physical concepts behind the theory of wave diffraction and scattered wave fields and their applications in radio physics, acoustics, optics, radio astronomy, biophysics, geophysics and astrophysics, highlighting several advanced topics that are pushing forward progress in the field.

KEY FEATURES

- Provides ideas and techniques for obtaining a priori information on analytical properties of wave fields and provides methods for solving diffraction problems
- Includes numerous concrete examples of localization of singularities of analytical continuation of wave fields
- Presents a qualitative explanation of the formation of visions of objects
- Formulates the concept of “invisible” objects
- Supplies appropriate computer programs for all presented methods

DESCRIPTION

Mathematical Modeling in Diffraction Theory: Based on A Priori Information on the Analytical Properties of the Solution provides the fundamental physical concepts behind the theory of wave diffraction and scattered wave fields as well as its application in radio physics, acoustics, optics, radio astronomy, biophysics, geophysics, and astrophysics.

This book provides a coherent discussion of several advanced topics that have the potential to push forward progress in this field. It begins with examples illustrating the importance of taking a priori information into account when developing algorithms for solving diffraction problems, with subsequent chapters discussing the basic analytical representations of wave fields, the auxiliary current and source methods for solving the problems of diffraction at compact scatterers, the null field and matrix methods that are widely used to solve problems in radio-physics, radio-astronomy, and biophysics, and the continued boundary condition and pattern equation method.

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TENSORS, RELATIVITY, AND COSMOLOGY

Second Edition



Mirjana Dalarsson
Nils Dalarsson



ISBN: 978-0-12-803397-5

PREVIOUS EDITION ISBN:
978-0-12-200681-4

PUB DATE: June 2015

FORMAT: Paperback

PAGES: c. 264

AUDIENCE

Graduate students in physics, cosmology, biological physics, and engineering taking courses in modern physics, theory of relativity, and electrodynamics; Researchers in academia and industry in physics, cosmology, biological physics, and engineering.

Tensors, Relativity, and Cosmology, 2e

Mirjana Dalarsson Ericsson Research and Development, Stockholm, Sweden

Nils Dalarsson Royal Institute of Technology, Department of Theoretical Physics, Stockholm, Sweden



A fully updated, revised, and easy-to-understand book that combines relativity, astrophysics, and cosmology in a single volume

KEY FEATURES

- Clearly combines relativity, astrophysics, and cosmology in a single volume
- Extensive introductions to each section are followed by relevant examples and numerous exercises
- Presents topics of interest to those researching and studying tensor calculus, the theory of relativity, gravitation, cosmology, quantum cosmology, Robertson-Walker Metrics, curvature tensors, kinematics, black holes, and more
- Fully revised and updated with 80 pages of new material on relativistic effects, such as relativity of simultaneity and relativity of the concept of distance, amongst other topics
- Provides an easy-to-understand approach to this advanced field of mathematics and modern physics by providing highly detailed derivations of all equations and results

DESCRIPTION

Tensors, Relativity, and Cosmology, Second Edition, combines relativity, astrophysics, and cosmology in a single volume, providing a simplified introduction to each subject that is followed by detailed mathematical derivations.

The book includes a section on general relativity that gives the case for a curved space-time, presents the mathematical background (tensor calculus, Riemannian geometry), discusses the Einstein equation and its solutions (including black holes and Penrose processes), and considers the energy-momentum tensor for various solutions. In addition, a section on relativistic astrophysics discusses stellar contraction and collapse, neutron stars and their equations of state, black holes, and accretion onto collapsed objects, with a final section on cosmology discussing cosmological models, observational tests, and scenarios for the early universe.

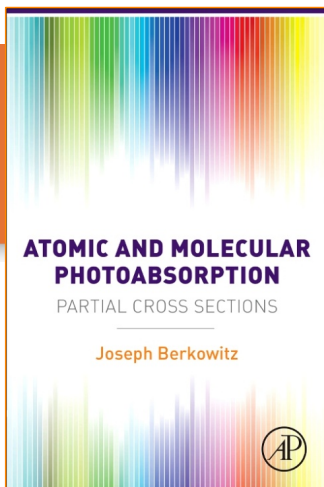
This fully revised and updated second edition includes new material on relativistic effects, such as the behavior of clocks and measuring rods in motion, relativistic addition of velocities, and the twin paradox, as well as new material on gravitational waves, amongst other topics.

PHYSICS

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ISBN: 978-0-12-801943-6

PUB DATE: March 2015

FORMAT: Hardback

PAGES: c. 518

AUDIENCE

Researchers in molecular spectroscopy as well as radiation physicists, chemists, biologists, and atmospheric chemists

Atomic and Molecular Photoabsorption

Absolute Partial Cross Sections

Joseph Berkowitz Emeritus Senior Physicist, Argonne National Laboratory, Argonne, IL, USA



Long-awaited companion to Joseph Berkowitz's *Atomic and Molecular Photoabsorption: Absolute Total Cross Sections*

KEY FEATURES

- Includes data on atoms, diatomic molecules, triatomic molecules, and polyatomic molecules
- Written by world-leading pioneer in the field of photoionization mass spectrometry
- Very clear presentation of the useful, quantitative information in both tables and graphs

DESCRIPTION

Atomic and Molecular Photoabsorption: Partial Cross Sections is a companion work to Joseph Berkowitz's earlier work, *Atomic and Molecular Photoabsorption: Absolute Total Cross Sections*, published with Academic Press in 2002.

In this work Joseph Berkowitz selected the "best" absolute partial cross sections for the same species as included in the companion work. A contrast, however, is that photoabsorption measurements, being of order I/I_0 , do not require the most intense light sources, whereas acquiring data on the products of light interactions with gaseous matter (ions, electrons, various coincidence measurements) has benefited significantly with the arrival of second- and third-generation synchrotrons. The newer devices have also extended the energy range of the light sources to include the K-shells of the species discussed here. The newer light sources encouraged experimentalists to develop improved instrumentation. Thus, the determination of partial cross sections continues to be an active field, with more recent results in some cases superseding earlier ones.

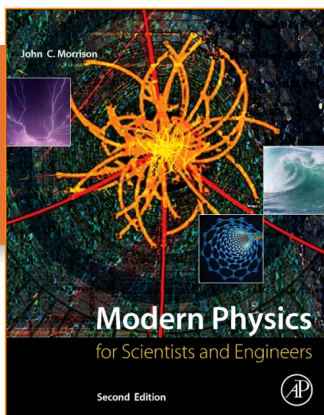
Where the accuracy of the absolute partial cross sections is deemed sufficient (less than five percent), numerical tables are included in this new work. In other cases, the available data are presented graphically.

PHYSICS

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ISBN: 978-0-12-800734-1

PREVIOUS EDITION ISBN:
978-0-12-375112-6

PUB DATE: February 2015

FORMAT: Hardback

PAGES: c. 410

AUDIENCE

Physics, Phys Sci & Engineering
students

Modern Physics, 2e for Scientists and Engineers

John Morrison Department of Physics and Astronomy, University of
Louisville, KY, USA



A comprehensive introduction to modern physics

KEY FEATURES

- Develops modern quantum mechanical ideas systematically and uses these ideas consistently throughout the book
- Carefully considers fundamental subjects such as transition probabilities, crystal structure, reciprocal lattices, and Bloch theorem which are fundamental to any treatment of lasers and semiconductor devices
- Clarifies each important concept through the use of a simple example and often an illustration
- Features expanded exercises and problems at the end of each chapter
- Offers multiple appendices to provide quick-reference for students

DESCRIPTION

The second edition of *Modern Physics for Scientists and Engineers* is intended for a first course in modern physics. Beginning with a brief and focused account of the historical events leading to the formulation of modern quantum theory, later chapters delve into the underlying physics. Streamlined content, chapters on semiconductors, Dirac equation and quantum field theory, as well as a robust pedagogy and ancillary package, including an accompanying website with computer applets, assist students in learning the essential material. The applets provide a realistic description of the energy levels and wave functions of electrons in atoms and crystals. The Hartree-Fock and ABINIT applets are valuable tools for studying the properties of atoms and semiconductors.

PHYSICS

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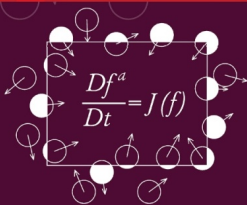


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UNIFIED NON-LOCAL THEORY OF TRANSPORT PROCESSES

BORIS ALEXEEV



ISBN: 978-0-444-63478-8

PREVIOUS EDITION ISBN:
9780444515827

PUB DATE: February 2015

FORMAT: Hardback

PAGES: c. 618

AUDIENCE

Theoretical and applied physicists,
astrophysicists, astronomers,
cosmologists, engineers

Unified Non-Local Theory of Transport Processes, 2e

Generalized Boltzmann Physical Kinetics

Boris V. Alexeev Physics Department, Moscow Lomonosov University of
Fine Chemical Technologies, Moscow, Russia



ELSEVIER

Fully revised and expanded comprehensive monograph providing the unified theory of transport processes from atom structures to the evolution of the universe.

"...contains a lot of illustrations and calculations supplied with the detailed discussions of the used approximations, their precision, parameters, etc. It is especially important within the first part of the book, where the method is introduced since these items allow for studying of the topic by newcomers."--**Zentralblatt MATH, *Unified Non-Local Theory of Transport Processes, 2nd Edition***

KEY FEATURES

- Fully revised and expanded edition, providing applications in quantum non-local hydrodynamics, quantum solitons in solid matter, and plasmas
- Uses generalized Boltzmann kinetic theory as an highly effective tool for solving many physical problems beyond classical physics
- Addresses dark matter and energy
- Presents non-local physics in many related problems of hydrodynamics, gravity, black holes, nonlinear optics, and applied mathematics

DESCRIPTION

Unified Non-Local Theory of Transport Processes, 2nd Edition provides a new theory of transport processes in gases, plasmas and liquids. It is shown that the well-known Boltzmann equation, which is the basis of the classical kinetic theory, is incorrect in the definite sense. Additional terms need to be added leading to a dramatic change in transport theory. The result is a strict theory of turbulence and the possibility to calculate turbulent flows from the first principles of physics.

PHYSICS

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ISBN: 978-0-12-804828-3

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 500

AUDIENCE

Physicists and researchers in related applied areas

Advances In Atomic, Molecular, and Optical Physics, Vol 65

Advances in Atomic, Molecular, and Optical Physics

Edited by: **Ennio Arimondo** Università di Pisa, Italy

Chun C. Lin Physics Department, University of Wisconsin, Madison, WI, USA

Susanne F. Yelin Physics Department, University of Connecticut, Storrs, CT, USA



This book provides a collection of timely articles by distinguished experts who offer relevant review material and detailed descriptions of important developments in atomic, molecular, and optical physics

KEY FEATURES

- Presents the work of international experts in the field
- Comprehensive articles compile recent developments in a field that is experiencing rapid growth, with new experimental and theoretical techniques emerging
- Ideal for users interested in optics, excitons, plasmas, and thermodynamics
- Topics covered include atmospheric science, astrophysics, surface physics, and laser physics, amongst others

DESCRIPTION

Advances in Atomic, Molecular, and Optical Physics provides a comprehensive compilation of recent developments in a field that is in a state of rapid growth, as new experimental and theoretical techniques are used on many problems, both old and new.

Topics covered include related applied areas, such as atmospheric science, astrophysics, surface physics, and laser physics, with timely articles written by distinguished experts that contain relevant review material and detailed descriptions of important developments in the field.

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ISBN: 978-0-12-804814-6

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 222

AUDIENCE

Physicists, electrical engineers and applied mathematicians in all branches of image processing and microscopy as well as electron physics in general.

Advances in Imaging and Electron Physics, Vol 194

Particles and Waves in Electron Optics and Microscopy

Edited by: **Peter W. Hawkes** CEMES/Laboratoire d'Optique Electronique du Centre National de la Recherche Scientifique, Toulouse, France



This latest volume in the series merges two long-running serials, *Advances in Electronics and Electron Physics* and *Advances in Optical and Electron Microscopy*, and features cutting-edge articles on recent developments in all areas of microscopy, digital image processing, and many related subjects in electron physics.

KEY FEATURES

- Contains contributions from leading authorities on the subject matter
- Informs and updates all the latest developments in the field of imaging and electron physics
- Provides practitioners interested in microscopy, optics, image processing, mathematical morphology, electromagnetic fields, electron, and ion emission with a valuable resource
- Features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science, and digital image processing

DESCRIPTION

Advances in Imaging and Electron Physics merges two long-running serials, *Advances in Electronics and Electron Physics* and *Advances in Optical and Electron Microscopy*. The series features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science, digital image processing, electromagnetic wave propagation, electron microscopy, and the computing methods used in all these domains.

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Progress in Optics, Vol 61

Progress in Optics

Taco Visser Department of Physics and Astronomy, Vrije Universiteit
Amsterdam, Amsterdam, The Netherlands



Presents the latest developments in the field of optics

KEY FEATURES

- Comprehensive, in-depth reviews
- Edited by the leading authority in the field

DESCRIPTION

The *Progress in Optics* series contains more than 300 review articles by distinguished research workers, which have become permanent records for many important developments, helping optical scientists and optical engineers stay abreast of their fields.

ISBN: 978-0-12-804699-9

PUB DATE: April 2016

FORMAT: Hardback

PAGES: c. 400

AUDIENCE

Researchers, professors,
postgraduate students, Academic
and corporate libraries in the field of
optics

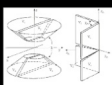
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Advances in
IMAGING and ELECTRON PHYSICS



Volume 193

EDITED BY
PETER W. HAWKES



ISBN: 978-0-12-804815-3

PUB DATE: February 2016

FORMAT: Hardback

PAGES: c. 144

AUDIENCE

Physicists, electrical engineers and applied mathematicians in all branches of image processing and microscopy as well as electron physics in general.

Advances in Imaging and Electron Physics, Vol 193

Advances in Imaging and Electron Physics

Edited by: **Peter W. Hawkes** CEMES/Laboratoire d'Optique Electronique du Centre National de la Recherche Scientifique, Toulouse, France



Merges two long-running serials, *Advances in Electronics and Electron Physics* and *Advances in Optical and Electron Microscopy*, and features cutting-edge articles on recent developments in all areas of microscopy, image science, and many related subjects in electron physics

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Advances in Imaging and Electron Physics merges two long-running serials, *Advances in Electronics and Electron Physics* and *Advances in Optical and Electron Microscopy*.

The series features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science, and digital image processing, electromagnetic wave propagation, electron microscopy, and the computing methods used in all these domains.

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Volume 66

**SOLID
STATE
PHYSICS**



ISBN: 978-0-12-803413-2

PUB DATE: October 2015

FORMAT: Hardback

PAGES: c. 468

AUDIENCE

Solid state physicists

Solid State Physics, Vol 66

Solid State Physics

Edited by: **Robert L. Stamps** School of Physics & Astronomy, University of Glasgow, UK

Robert E. Camley Department of Physics & Energy Science, University of Colorado at Colorado Springs, CO, USA



This series continually publishes cutting-edge reviews pertaining to all aspects of solid state physics, providing the latest information on the branch of physics that is primarily devoted to the study of matter in its solid phase, especially at the atomic level

KEY FEATURES

- Contains contributions from leading authorities in the study of solid state physics, especially at the atomic level
- Informs and updates on all the latest developments in the field
- presents timely and state-of-the-art reviews pertaining to all aspects of solid state physics

DESCRIPTION

Solid State Physics provides the latest information on the branch of physics that is primarily devoted to the study of matter in its solid phase, especially at the atomic level. This prestigious serial presents timely and state-of-the-art reviews pertaining to all aspects of solid state physics.

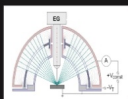
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Advances in
IMAGING and ELECTRON PHYSICS



Volume 192

Analytical, Approximate-Analytical
and Numerical Methods in the
Design of Energy Analyzers

VICTOR S. GUROV
ARMAN O. SAULEBEKOV
ANDREY A. TRUBITSYN



ISBN: 978-0-12-802252-8

PUB DATE: October 2015

FORMAT: Hardback

PAGES: c. 214

AUDIENCE

Physicists, electrical engineers and applied mathematicians in all branches of image processing and microscopy as well as electron physics in general.

Advances in Imaging and Electron Physics, Vol 192

Analytical, Approximate-Analytical and Numerical Methods in the Design of Energy Analyzers

Edited by: **Peter W. Hawkes** CEMES/Laboratoire d'Optique Electronique du Centre National de la Recherche Scientifique, Toulouse, France



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DESCRIPTION

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The series features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science, and digital image processing, electromagnetic wave propagation, electron microscopy, and the computing methods used in all these domains.

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Advances in ATOMIC,
MOLECULAR, and
OPTICAL PHYSICS

Serial Edited by
Ennio Arimondo
Chun C. Lin
Susanne Yelin

Volume 64



ISBN: 978-0-12-802127-9

PUB DATE: September 2015

FORMAT: Hardback

PAGES: c. 438

AUDIENCE

Physicists and researchers in related
applied areas

Advances In Atomic, Molecular, and Optical Physics, Vol 64

Advances in Atomic, Molecular, and Optical Physics

Edited by: **Ennio Arimondo** Università di Pisa, Italy

Chun C. Lin Physics Department, University of Wisconsin, Madison, WI, USA

Susanne F. Yelin Physics Department, University of Connecticut, Storrs, CT, USA



Timely articles by distinguished experts offer relevant review material and detailed descriptions of important developments in atomic, molecular, and optical physics

KEY FEATURES

- Presents the work of international experts in the field
- Comprehensive articles compile recent developments in a field that is experiencing rapid growth, with new experimental and theoretical techniques emerging
- Ideal for users interested in optics, excitons, plasmas, and thermodynamics
- Topics covered include atmospheric science, astrophysics, surface physics, and laser physics, amongst others

DESCRIPTION

Advances in Atomic, Molecular, and Optical Physics provides a comprehensive compilation of recent developments in a field that is in a state of rapid growth, as new experimental and theoretical techniques are used on many problems, both old and new.

Topics covered include related applied areas, such as atmospheric science, astrophysics, surface physics, and laser physics, with timely articles written by distinguished experts that contain relevant review material and detailed descriptions of important developments in the field.

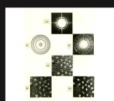
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Advances in
IMAGING and ELECTRON PHYSICS



Volume 191

EDITED BY
PETER W. HAWKES



ISBN: 978-0-12-802253-5

PUB DATE: August 2015

FORMAT: Hardback

PAGES: c. 332

AUDIENCE

Physicists, electrical engineers and applied mathematicians in all branches of image processing and microscopy as well as electron physics in general.

Advances in Imaging and Electron Physics, Vol 191

Advances in Imaging and Electron Physics

Edited by: **Peter W. Hawkes** CEMES/Laboratoire d'Optique Electronique du Centre National de la Recherche Scientifique, Toulouse, France



Cutting-edge articles on recent developments in all areas of microscopy, image science, and related subjects in electron physics

KEY FEATURES

- Contains contributions from leading authorities on the subject matter
- Informs and updates on all the latest developments in the field of imaging and electron physics
- Provides practitioners interested in microscopy, optics, image processing, mathematical morphology, electromagnetic fields, electron, and ion emission with a valuable resource
- Features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science, and digital image processing

DESCRIPTION

Advances in Imaging & Electron Physics merges two long-running serials—*Advances in Electronics & Electron Physics* and *Advances in Optical & Electron Microscopy*.

The series features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science, and digital image processing, electromagnetic wave propagation, electron microscopy, and the computing methods used in all these domains.

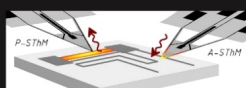
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Advances in
IMAGING and ELECTRON PHYSICS



Volume 190

EDITED BY
PETER W. HAWKES



ISBN: 978-0-12-802380-8

PUB DATE: June 2015

FORMAT: Hardback

PAGES: c. 240

AUDIENCE

Physicists, electrical engineers and applied mathematicians in all branches of image processing and microscopy as well as electron physics in general.

Advances in Imaging and Electron Physics, Vol 190

Advances in Imaging and Electron Physics

Edited by: **Peter W. Hawkes** CEMES/Laboratoire d'Optique Electronique du Centre National de la Recherche Scientifique, Toulouse, France



Features cutting-edge articles on recent developments in all areas of microscopy, image science and many related subjects in electron physics

KEY FEATURES

- Contributions from leading authorities
- Informs and updates on all the latest developments in the field

DESCRIPTION

Advances in Imaging and Electron Physics merges two long-running serials—*Advances in Electronics and Electron Physics* and *Advances in Optical and Electron Microscopy*. The series features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science and digital image processing, electromagnetic wave propagation, electron microscopy, and the computing methods used in all these domains.

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EMIL WOLF
EDITOR



VOLUME 60

CONTRIBUTORS

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ISBN: 978-0-12-802284-9

PUB DATE: June 2015

FORMAT: Hardback

PAGES: c. 14

AUDIENCE

Researchers, professors,
postgraduate students, Academic
and corporate libraries in the field of
optics

Progress in Optics, Vol 60

Progress in Optics

Edited by: *Emil Wolf* University of Rochester, NY, USA



Presents the latest developments in the field of optics

KEY FEATURES

- Comprehensive, in-depth reviews
- Edited by the leading authority in the field

DESCRIPTION

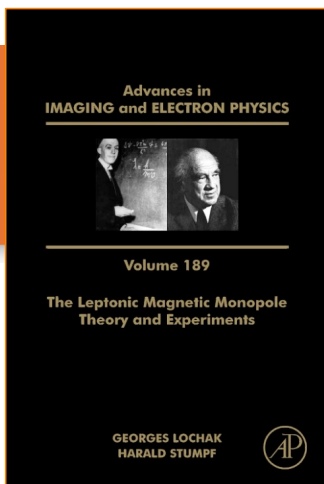
The *Progress in Optics* series contains more than 300 review articles by distinguished research workers, which have become permanent records for many important developments, helping optical scientists and optical engineers stay abreast of their fields.

SERIALS

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ISBN: 978-0-12-802463-8

PUB DATE: May 2015

FORMAT: Hardback

PAGES: c. 330

AUDIENCE

Physicists, electrical engineers and applied mathematicians in all branches of image processing and microscopy as well as electron physics in general.

Advances in Imaging and Electron Physics, Vol 189

The Leptonic Magnetic Monopole – Theory and Experiments

Edited by: **Peter W. Hawkes** CEMES/Laboratoire d'Optique Electronique du Centre National de la Recherche Scientifique, Toulouse, France



Features cutting-edge articles on recent developments in all areas of microscopy, image science and many related subjects in electron physics

KEY FEATURES

- Contributions from leading authorities
- Informs and updates on all the latest developments in the field

DESCRIPTION

Advances in Imaging and Electron Physics merges two long-running serials—*Advances in Electronics and Electron Physics* and *Advances in Optical and Electron Microscopy*. The series features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science and digital image processing, electromagnetic wave propagation, electron microscopy, and the computing methods used in all these domains.

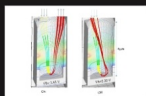
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Advances in
IMAGING and ELECTRON PHYSICS



Volume 188

EDITED BY
PETER W. HAWKES



ISBN: 978-0-12-802254-2

PUB DATE: April 2015

FORMAT: Hardback

PAGES: c. 222

AUDIENCE

Physicists, electrical engineers and applied mathematicians in all branches of image processing and microscopy as well as electron physics in general.

Advances in Imaging and Electron Physics, Vol 188

Advances in Imaging and Electron Physics

Edited by: **Peter W. Hawkes** CEMES/Laboratoire d'Optique Electronique du Centre National de la Recherche Scientifique, Toulouse, France



Features cutting-edge articles on recent developments in all areas of microscopy, image science and many related subjects in electron physics

KEY FEATURES

- Contributions from leading authorities
- Informs and updates on all the latest developments in the field

DESCRIPTION

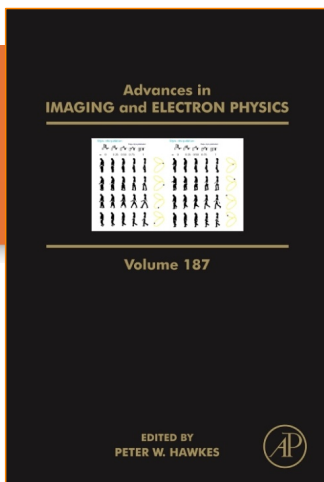
Advances in Imaging and Electron Physics merges two long-running serials—*Advances in Electronics and Electron Physics* and *Advances in Optical and Electron Microscopy*. The series features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science and digital image processing, electromagnetic wave propagation, electron microscopy, and the computing methods used in all these domains.

SERIALS

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ISBN: 978-0-12-802255-9

PUB DATE: February 2015

FORMAT: Hardback

PAGES: c. 130

AUDIENCE

Physicists, electrical engineers and applied mathematicians in all branches of image processing and microscopy as well as electron physics in general.

Advances in Imaging and Electron Physics, Vol 187

Advances in Imaging and Electron Physics

Edited by: **Peter W. Hawkes** CEMES/Laboratoire d'Optique Electronique du Centre National de la Recherche Scientifique, Toulouse, France



Features cutting-edge articles on recent developments in all areas of microscopy, image science and many related subjects in electron physics

KEY FEATURES

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- Informs and updates on all the latest developments in the field

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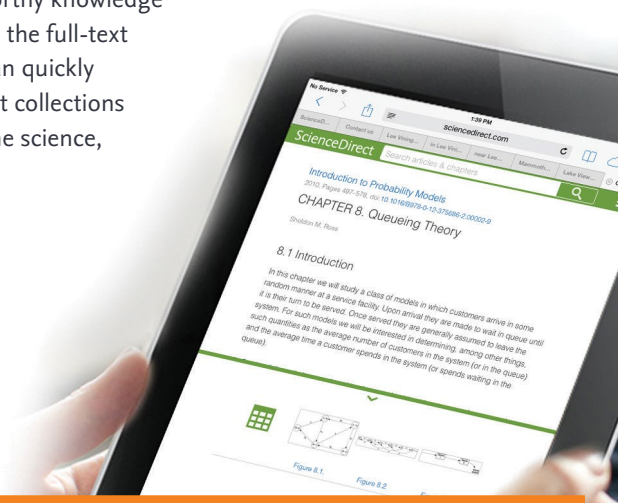
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