

# Probability & Statistics 2011/12

Textbook

## EXPECT THE UNEXPECTED

A First Course in Biostatistics

by Raluca Balan &

Gilles Lamothe

(University of Ottawa, Canada)

Statistical reasoning and modeling are of critical importance to modern biology. This textbook introduces fundamental concepts from probability and statistics which will pave the way for the student of biology to become a well-rounded scientist. No previous study of probability or statistics is assumed. Calculus topics are not used extensively in this book, though some integration and differentiation are expected. The calculus prerequisite is primarily intended to assure a certain level of mathematical maturity. This book puts emphasis on examples, which are presented to motivate the theory. The presentation style is concise and self-contained, briefly including the mathematical elements that are needed for studying probability and statistics. The examples are relevant to students in the life sciences with interests in genetics, biology, ecology, health, etc.

**Contents:** **Probability:** Probability; Combinatorial Techniques; Elementary Genetics; Conditional Probability; Bayes' Rule; Statistical Independence; Discrete and Continuous Random Variables; Binomial; Poisson; Normal Distributions; **Statistics:** Gathering and Describing Data; Sampling Distributions; Point and Interval Estimation; Hypothesis Testing; Comparison of Two Independent Samples; Paired Samples; Categorical Data, Regression and Correlation.

252pp  
978-981-4291-32-3

May 2011  
US\$60      £39

Notable Title

## FUNCTIONAL ESTIMATION FOR DENSITY, REGRESSION MODELS AND PROCESSES

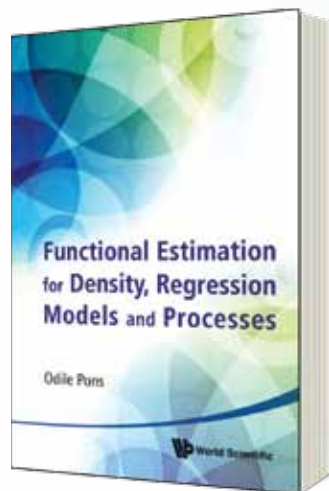
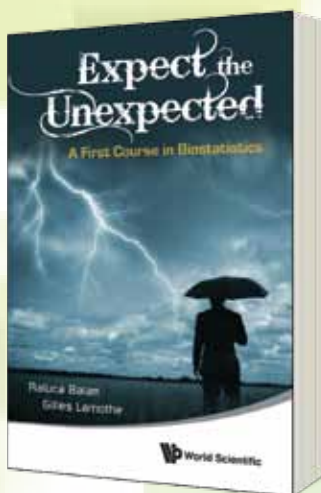
by Odile Pons (INRA, France)

This book presents a unified approach on nonparametric estimators for models of independent observations, jump processes and continuous processes. New estimators are defined and their limiting behavior is studied. From a practical point of view, the book expounds on the construction of estimators for functionals of processes and densities, and provides asymptotic expansions and optimality properties from smooth estimators.

It also presents new regular estimators for functionals of processes, compares histogram and kernel estimators, compares several new estimators for single-index models, and it examines the weak convergence of the estimators.

212pp  
978-981-4343-73-2  
978-981-4343-74-9(ebook)

Mar 2011  
US\$75      £49  
US\$98



Bestselling Textbook

## RANDOM FIELDS

Analysis and Synthesis

Revised and Expanded New Edition

by Erik Vanmarcke (Princeton University, USA)

Review of Previous Edition:

*"Random Fields is a book which I found both technically interesting and a pleasure to read ... The presentation is clear and the book should be useful to almost anyone who uses random processes to solve problems in engineering or science ... I was particularly impressed with ... the emphasis on utility and the importance of local averages.*

*Chapter 4, 'Spectral Parameters, Level Excursions, and Extremes', is an unusually clear and orderly treatment of these topics. It is also refreshing to read a work on stochastic processes where the author emphasizes that microscopic variations may be of no practical interest to the problem at hand!"*

David J Thomson  
Bell Laboratories, New Jersey, USA, in EOS (American Geophysical Union)

This volume, a revised and expanded edition of an acclaimed book first published by the MIT Press, offers a synthesis of methods to describe and analyze and, where appropriate, predict and control random fields. There is much new material, covering both theory and applications, notably on a class of probability distributions derived from quantum mechanics, relevant to stochastic modeling in fields such as cosmology, biology and system reliability, and on discrete-unit or agent-based random processes.

**Contents:** Introduction; Fundamentals of Analysis of Random Fields; Second-Order Fundamentals of Homogeneous Random Fields; Spectral Parameters, Level Crossings, and Extremes; Local Average Processes on the Line; Two-Dimensional Local Average Processes; Multi-Dimensional Local Average Processes; Overview of Findings.

364pp  
978-981-256-297-5  
978-981-256-353-8(pbk)

Jul 2010  
US\$85      £53  
US\$48      £30

## ELEMENTS OF STOCHASTIC FINANCE

### Theory, Methods, and Computation

by **Frederi G Viens**, **José Enrique Figueroa-López** (*Purdue University, USA*), & **Alexandra Chronopoulou** (*Institut National de Recherche en Informatique et Automatique, France*)

This comprehensive course on financial mathematics is aimed at beginning graduate students in any field with a good quantitative background, and is appropriate for advanced undergraduates in mathematics and statistics. It is also invaluable as a reference for practitioners in financial engineering. Via an accessible presentation of the theory of probability and stochastic processes needed to construct and employ most models commonly used in investment finance, including binomial trees, Brownian motion, martingales, Markov processes, and Lévy processes, the book covers no-arbitrage option pricing, hedging, and portfolio optimization in the Black–Scholes–Merton framework, exotic and American options, and fixed-income securities under stochastic interest rates.

A large number of exercises illustrate the theory and practice of each financial topic, some of which encourage the reader to engage in high-level programming.

<b>400pp</b>	<b>Jun 2012</b>		
<b>978-981-4307-36-9</b>	<b>US\$78</b>	<b>£51</b>	
<b>978-981-4307-37-6(pbk)</b>	<b>US\$38</b>	<b>£25</b>	

## EVERYDAY PROBABILITY AND STATISTICS

### Health, Elections, Gambling and War

#### Second Edition

by **Michael Mark Wolfson** (*University of York, UK*)

Probability and statistics impinge on the life of the average person in a variety of ways — as is suggested by the title of this book. Very often, information is provided that is factually accurate but intended to present a biased view. This book presents the important results of probability and statistics without making heavy mathematical demands on the reader. It should enable an intelligent reader to properly assess statistical information and to understand that the same information can be presented in different ways.

The author presents a new chapter exploring science and society including the way that scientists communicate with the public on current topics such as global warming. The book also investigates pensions and pension policy, and how they are influenced by changing actuarial tables.

<b>240pp</b>	<b>Apr 2012</b>		
<b>978-1-84816-761-2</b>	<b>US\$75</b>	<b>£49</b>	
<b>978-1-84816-762-9(pbk)</b>	<b>US\$48</b>	<b>£31</b>	
<b>978-1-84816-763-6(ebook)</b>	<b>US\$98</b>		

Imperial College Press Optimization Series - Vol. 2

## EXAMPLES IN MARKOV DECISION PROCESSES

by **A B Piunovskiy** (*The University of Liverpool, UK*)

This invaluable book provides approximately eighty examples illustrating the theory of controlled discrete-time Markov processes. Except for applications of the theory to real-life problems like stock exchange, queues, gambling, optimal search etc, the main attention is paid to counter-intuitive, unexpected properties of optimization problems. Such examples illustrate the importance of conditions imposed in the theorems on Markov Decision Processes. Many of the examples are based upon examples published earlier in journal articles or textbooks while several other examples are new. The aim was to collect them together in one reference book which should be considered as a complement to existing monographs on Markov decision processes.

The book is self-contained and unified in presentation. It is an essential source of reference for mathematicians and all those who apply the optimal control theory to practical purposes.

<b>230pp</b>	<b>Apr 2012</b>		
<b>978-1-84816-793-3</b>	<b>US\$78</b>	<b>£51</b>	
<b>978-1-84816-794-0(ebook)</b>	<b>US\$101</b>		

Series on Complexity, Nonlinearity and Chaos

## FRACTIONAL CALCULUS MODELS AND NUMERICAL METHODS

by **Kai Diethelm** (*Technische Universität Braunschweig, Germany & GNS mbH, Germany*), **Dumitru Baleanu** (*Çankaya University, Turkey & Institute of Space Sciences, Romania*), **Enrico Scalas** (*Università del Piemonte Orientale, Italy*), & **Juan J Trujillo** (*University of La Laguna, Spain*)

This book will give readers the possibility of finding very important mathematical tools for working with fractional models and solving fractional differential equations, such as a generalization of Stirling numbers in the framework of fractional calculus and a set of efficient numerical methods. Moreover, we will introduce some applied topics, in particular fractional variational methods which are used in physics, engineering or economics. We will also discuss the relationship between semi-Markov continuous-time random walks and the space-time fractional diffusion equation, which generalizes the usual theory relating random walks to the diffusion equation. These methods can be applied in finance, to model tick-by-tick (log)-price fluctuations, in insurance theory, to study ruin, as well as in macroeconomics as prototypical growth models.

<b>450pp</b>	<b>Jan 2012</b>		
<b>978-981-4355-20-9</b>	<b>US\$130</b>	<b>£85</b>	
<b>978-981-4355-21-6(ebook)</b>	<b>US\$169</b>		

## COMPLEX ANALYSIS IN FREE PROBABILITY THEORY

by **Hari Bercovici** & **John Williams** (*Indiana University, USA*)

The book will describe those results in free probability which rely on analytic functions of one variable. These results include free versions of many known results about the addition and multiplication of random variables, including characterizations of infinite divisibility and weak limit theorems. The complex analysis necessary for these developments will be presented to the extent that it exceeds standard graduate presentations of the subject.

**Contents:** Free Convolutions; Free Multiplicative Convolution on the Circle; Free Additive Convolution on the Real Line; Free Multiplicative Convolution on the Positive Half Line; Further Developments.

<b>250pp</b>	<b>Dec 2011</b>		
<b>978-981-4335-56-0</b>	<b>US\$68</b>	<b>£42</b>	
<b>978-981-4335-57-7(ebook)</b>	<b>US\$88</b>		

## NONLINEAR MIXTURE MODELS

### A Bayesian Approach

by **Tatiana Tatarinova** (*University of Glamorgan, UK*) & **Alan Schumitzky** (*University of Southern California, USA*)

This book provides a broad introduction to the important subject of nonlinear mixture models from a Bayesian perspective. It contains background material, a brief description of Markov chain theory, as well as novel algorithms and their applications. It is self-contained and unified in presentation, which makes it ideal for use as an advanced textbook by graduate students and as a reference for independent researchers. The explanations in the book are detailed enough to capture the interest of the curious reader, and complete enough to provide the necessary background material needed to go further into the subject and explore the research literature.

**Contents:** Introduction; Mathematical Description of Nonlinear Mixture Models; Label Switching and Trapping; Treatment of Mixture Models with an Unknown Number of Components; Applications of BDMCMC, KLMCMC; Bayesian Clustering Methods.

<b>250pp</b>	<b>Oct 2011</b>		
<b>978-1-84816-756-8</b>	<b>US\$90</b>	<b>£59</b>	
<b>978-1-84816-757-5(ebook)</b>	<b>US\$117</b>		

## CONTINUOUS-TIME MARKOV CHAINS

### Q-Matrix Problem

by **Hou Zhenting, Li Junping** (*Central South University, China*),  
& **Chen Anyue** (*University of Liverpool, UK & University of Hong Kong, Hong Kong*)

This book reports the recent progress in the field of continuous-time Markov chains (CTMCs), with a comprehensive and extensive discussion on its general theory and applications. It covers the properties of Q-matrix and transition function as well as the existence and uniqueness of Q-processes in stable and unstable cases.

**Contents:** Transition Functions and Q-Matrix; Some Basic Tools; Existence of Q-Processes: Stable Q-Matrix Case; Uniqueness of Q-Processes: Stable Q-Matrix Case; Existence and Uniqueness: Unstable Q-Matrix Case; Irreducibility and Recurrence; Ergodicity and Equilibrium Distribution; Absorbing Chains and Branching Processes; Invariant Measure and Quasi-Limiting Distributions; Reversibility and Birth-Death Processes; Monotonicity and Duality; Coupling and Spectral Gap; Markovian Queues and Skip-Free Processes.

400pp Jun 2011  
978-981-283-806-3 US\$77 £53

Statistical Science and Interdisciplinary Research - Vol. 14

## STATISTICAL PARADIGMS

### Recent Advances and Reconciliations

edited by **Ashis SenGupta, Tapas Samanta, & Ayanendranath Basu**  
(*Indian Statistical Institute, India*)

This volume consists of a collection of research articles on classical and emerging Statistical Paradigms — parametric, non-parametric and semi-parametric, frequentist and Bayesian — encompassing both theoretical advances and emerging applications in a variety of scientific disciplines. For advances in theory, the topics include: Bayesian Inference, Directional Data Analysis, Distribution Theory, Econometrics and Multiple Testing Procedures. The areas in emerging applications include: Bioinformatics, Factorial Experiments and Linear Models, Hotspot Geoinformatics and Reliability.

250pp Oct 2011  
978-981-4343-95-4 US\$96 £62  
978-981-4343-96-1(ebook) US\$125

## INTRODUCTION TO HIDA DISTRIBUTIONS

by **Si Si** (*Aichi Prefectural University, Japan*)

This book provides the mathematical definition of white noise and gives its significance. White noise is in fact a typical class of idealized elemental (infinitesimal) random variables. Thus, we are naturally led to have functionals of such elemental random variables that is white noise. This book analyzes those functionals of white noise, particularly the generalized ones called Hida distributions, and highlights some interesting future directions. The main part of the book involves infinite dimensional differential and integral calculus based on the variable which is white noise.

The present book can be used as a supplementary book to *Lectures of White Noise Functionals* published in 2008, with detailed background provided.

**Contents:** White Noise and Its Probability Distribution; Linear Functionals of White Noise; Gaussian Systems and Their Representations; Nonlinear Functionals of White Noise; Hida Distributions (Generalized Functionals of White Noise); Applications to Quantum Dynamics, Statistics and Biology.

200pp Sep 2011  
978-981-283-688-5 US\$65 £45  
978-981-283-689-2(ebook) US\$85

## AN INTRODUCTION TO THE THEORY OF PROBABILITY

by **Parimal Mukhopadhyay** (*Indian Statistical Institute, India*)

This book provides a systematic exposition of the theory in a setting which contains a balanced mixture of the classical approach and the modern day axiomatic approach. Difficult ideas have been explained lucidly and have been augmented with explanatory notes, examples and exercises. The basic requirement for reading this book is simply a knowledge of mathematics at graduate level. This book tries to explain the difficult ideas in the axiomatic approach to the theory of probability in a clear and comprehensible manner. It includes several unusual distributions including the power series distribution that have been covered in great detail. Readers will find many worked-out examples and exercises with hints, which will make the book easily readable and engaging.

**Contents:** Classical Theory and Its Limitations; Axiomatic Approach; Random Variables and Distributions; Expectation of a Discrete Random Variable; Properties of Probability Distributions in  $R^1$ ; Generating Functions; Some Discrete Distributions in  $R^1$ ; Some Continuous Distributions in  $R^1$ ; Probability Distributions in  $R^n$ ; Probability Distribution of Functions of Random Variables; Convergence of a Sequence of Random Variables.

490pp Sep 2011  
978-981-4313-42-1 US\$62 £38

## LARGE SAMPLE INFERENCE FOR LONG MEMORY PROCESSES

by **Liudas Giraitis** (*University of London, UK*), **Hira L Koul** (*Michigan State University, USA*), & **Donatas Surgailis** (*Institute of Mathematics and Informatics, Lithuania*)

A discrete-time stationary stochastic process with finite variance is said to have long memory if its autocorrelations tend to zero hyperbolically in the lag, i.e. like a power of the lag, as the lag tends to infinity. The absolute sum of autocorrelations of such processes diverges and their spectral density at the origin is unbounded. This is unlike the so-called weakly dependent processes, where autocorrelations tend to zero exponentially fast and the spectral density is bounded at the origin. In a long memory process, the dependence between the current observation and the one at a distant future is persistent; whereas in the weakly dependent processes, these observations are approximately independent. This fact alone is enough to warn a person about the validity of the classical inference procedures based on the square root of the sample size standardization when data are generated by a long-term memory process.

**Contents:** Introduction; Estimation; Some Inference Problems; Residual Empirical Processes; Regression Models; Nonparametric Regression with Heteroscedastic Errors; Model Checking under Long Memory; Long Memory under Infinite Variance.

500pp Sep 2011  
978-1-84816-278-5 US\$99 £68

## TOPICS IN PROBABILITY

by **Narahari Prabhu** (*Cornell University, USA*)

Recent research in probability has been concerned with applications such as data mining and finance models. Some aspects of the foundations of probability theory have receded into the background. Yet, these aspects are very important and have to be brought back into prominence.

**Contents:** Probability Distributions; Characteristic Functions; Analytic Characteristic Functions; Infinitely Divisible Distributions; Self-Decomposable Distributions; Triangular Arrays.

200pp May 2011  
978-981-4335-47-8 US\$78 £48  
978-981-4335-48-5(ebook) US\$101

World Scientific Series on Nonlinear Science, Series A  
**QUALITATIVE AND ASYMPTOTIC ANALYSIS OF DIFFERENTIAL EQUATIONS WITH RANDOM PERTURBATIONS**

by **Anatoliy M Samoilenko** (National Academy of Sciences, Ukraine) & **Oleksandr Stanzhytskyi** (National Kyiv Shevchenko University, Ukraine)

This work focuses on the approach to stochastic equations from the perspective of ordinary differential equations. For this purpose, both asymptotic and qualitative methods which appeared in the classical theory of differential equations and nonlinear mechanics are developed.

**Contents:** Differential Equations with Random Right Hand Side and Random Impulse Action; Invariant Sets of Systems with Random Perturbations; Stability of Invariant Sets and the Reduction Principle for Ito Systems, Linear and Quasilinear Stochastic Ito Systems; Exponential Dichotomy in the Quadratic Mean; Asymptotic Equivalence of Linear; Extension of Ito Systems on Torus; Stability of Invariant Tori; Stochastic Invariant Tori of Nonlinear Analysis of the Equations with Random Perturbations Using Averaging.

**350pp** **Jun 2011**  
**978-981-4329-06-4** **US\$98** **£61**  
**978-981-4329-07-1(ebook)** **US\$127**

Series on Multivariate Analysis - Vol. 9

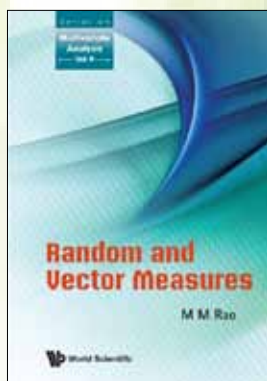
**RANDOM AND VECTOR MEASURES**

by **M M Rao** (University of California, Riverside, USA)

The book is devoted to the structural analysis of vector and random (or both) valued countably additive measures, and used for integral representations of random fields. The spaces can be Banach or Frechet types.

**Contents:** Second Order Random Measures and Representations; Measures Admitting Controls; Martingale Type Measures and Their Integrals; Multiple Random Measures; Vector Measures and Geometric Integration; Comparative Study of Random and Vector Measures; Several Applications and Complements of the Preceding Work.

**550pp** **Jun 2011**  
**978-981-4350-81-5** **US\$150** **£98**  
**978-981-4350-82-2(ebook)** **US\$195**

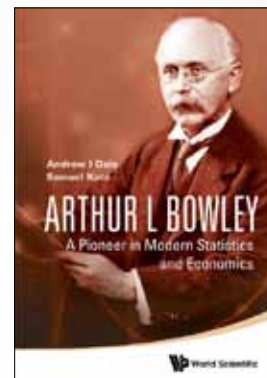


**ARTHUR L BOWLEY**

**A Pioneer in Modern Statistics and Economics**

by **Samuel Kotz** (George Washington University, USA) & **Andrew I Dale** (University of KwaZulu-Natal, South Africa)

Arthur Lyon Bowley, the founding father of modern statistics, was an important and colorful figure and a leader in cementing the foundations of statistical methodology, including survey methodology, and of the applications of statistics to economical and social issues during the late 19th and early 20th centuries. In many respects, he was ahead of his time. The giants in this field around that time were largely concentrated in the British Isles and Scandinavian countries; among these contributors, Arthur Bowley was one of the most active in revolutionizing statistical methodology and its economic applications.



**532pp** **Apr 2011**  
**978-981-283-550-5** **US\$110** **£72**  
**978-981-283-551-2(ebook)** **US\$143**



**HANDS-ON MATRIX ALGEBRA USING R**

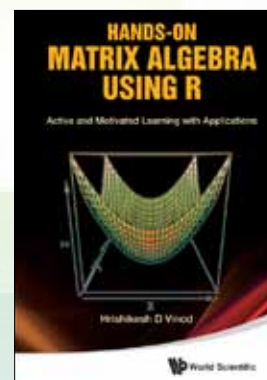
**Active and Motivated Learning with Applications**

by **Hrishikesh D Vinod** (Fordham University, USA)

*“New generations of readers, fluent in computer languages and addicted to the web interfaces will enter effortlessly into the intricate structure of matrices and quadratic forms, with great benefits for their immediate applied mathematical aims. The readers already familiar with theoretical linear algebra will find in the book an invaluable source of examples and novel computer experiments, all illustrating the flexibility and high potential of the language R ... A pure delight to the reader.”*

**Mihai Putinar**  
**Professor**

**University of California, Santa Barbara, USA**



**348pp** **Mar 2011**  
**978-981-4313-68-1** **US\$105** **£68**  
**978-981-4313-69-8(pbk)** **US\$52** **£34**



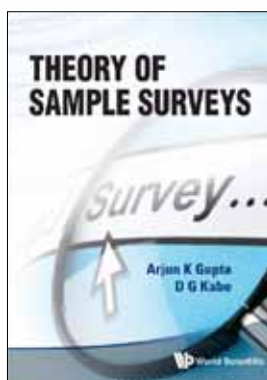
**THEORY OF SAMPLE SURVEYS**

by **Arjun K Gupta** (Bowling Green State University, USA) & **D G Kabe** (St Mary's University, Canada)

This book is the culmination of the lecture notes developed by the authors. The approach is theoretical in the sense that it gives mathematical proofs of the results in sample surveys. Intended as a textbook for a one-semester course for undergraduate seniors or first-year graduate students, a prerequisite basic knowledge of algebra, calculus, and statistical theory is required to master the techniques described in this book.

**Contents:** Simple Random Sampling; Sampling with Varying Probabilities of Selection; Stratified Sampling; Systematic Sampling; Ratio Method of Estimation; Regression Method of Estimation; Cluster Sampling; Sub-Sampling Two-Stage and Three-Stage Sampling; Double Sampling; Non-Sampling Errors.

**236pp** **Mar 2011**  
**978-981-4322-47-8** **US\$58** **£36**



Advanced Series on Statistical Science and Applied Probability - Vol. 15  
**HEDGING DERIVATIVES**

by **Thorsten Rheinländer** (London School of Economics and Political Science, UK) & **Jenny Sexton** (University of Manchester, UK)

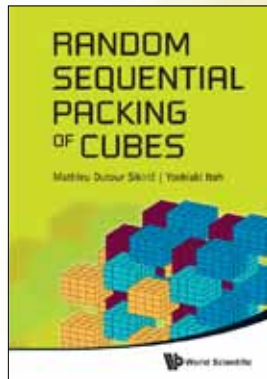
This volume provides a systematic treatment of hedging in incomplete markets. Mean-variance hedging under the risk-neutral measure is applied in the framework of exponential Lévy processes and for derivatives written on defaultable assets. It is discussed how to complete markets based upon stochastic volatility models via trading in both stocks and vanilla options. Exponential utility indifference pricing is explored via a duality with entropy minimization. Backward stochastic differential equations offer an alternative approach and are moreover applied to study markets with trading constraints including basis risk. A range of optimal martingale measures are discussed including the entropy, Esscher and minimal martingale measures. Quasi-symmetry properties of stochastic processes are deployed in the semi-static hedging of barrier options.

**250pp** **May 2011**  
**978-981-4338-79-0** **US\$88** **£58**  
**978-981-4338-80-6(ebook)** **US\$114**

## RANDOM SEQUENTIAL PACKING OF CUBES

by **Mathieu Dutour Sikirić** (*Ruđer Bošković Institute, Croatia*) & **Yoshiaki Itoh** (*The Graduate University for Advanced Studies, Japan & The Institute of Statistical Mathematics, Japan*)

In this volume very simplified models are introduced to understand the random sequential packing models mathematically. The 1-dimensional model is sometimes called the Parking Problem, which is known by the pioneering works by Flory (1939), Renyi (1958), Dvoretzky and Robbins (1962). To obtain a 1-dimensional packing density, distribution of the minimum of gaps, etc., the classical analysis has to be studied. The packing density of the general multi-dimensional random sequential packing of cubes (hypercubes) makes a well-known unsolved problem. This book introduces simplified multi-dimensional models of cubes and torus, which keep the character of the original general model, and introduces a combinatorial analysis for combinatorial modelings.



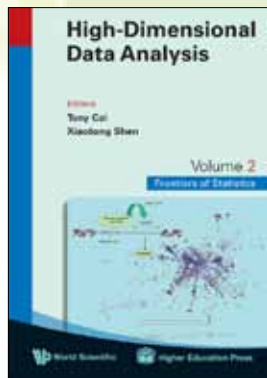
**256pp** **Jan 2011**  
**978-981-4307-83-3** **US\$80** **£50**  
**978-981-4307-84-0(ebook)** **US\$104**

Frontiers of Statistics - Vol. 2

## HIGH-DIMENSIONAL DATA ANALYSIS

edited by **Tony Cai** (*University of Pennsylvania, USA*) & **Xiaotong Shen** (*University of Minnesota, USA*)

Over the last few years, significant developments have been taking place in high-dimensional data analysis, driven primarily by a wide range of applications in many fields such as genomics and signal processing. In particular, substantial advances have been made in the areas of feature selection, covariance estimation, classification and regression. This book intends to examine important issues arising from high-dimensional data analysis to explore key ideas for statistical inference and prediction.



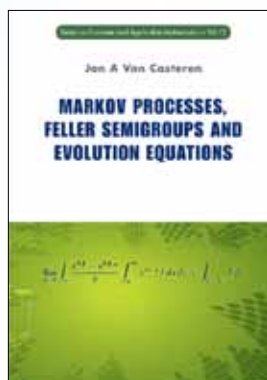
**300pp** **Dec 2010**  
**978-981-4324-85-4** **US\$85** **£53**  
**978-981-4324-86-1(ebook)** **US\$111**

Series on Concrete and Applicable Mathematics - Vol. 12

## MARKOV PROCESSES, FELLER SEMIGROUPS AND EVOLUTION EQUATIONS

by **Jan A van Casteren** (*University of Antwerp, Belgium*)

The book provides a systemic treatment of time-dependent strong Markov processes with values in a Polish space. It describes its generators and the link with stochastic differential equations in infinite dimensions. In a unifying way, where the square gradient operator is employed, new results for backward stochastic differential equations and long-time behavior are discussed in depth. The book also establishes a link between propagators or evolution families with the Feller property and time-inhomogeneous Markov processes. This mathematical material finds its applications in several branches of the scientific world, among which are mathematical physics, hedging models in financial mathematics, and population models.



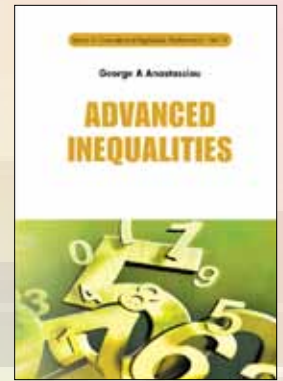
**824pp** **Nov 2010**  
**978-981-4322-18-8** **US\$148** **£92**  
**978-981-4322-19-5(ebook)** **US\$192**

Series on Concrete and Applicable Mathematics - Vol. 11

## ADVANCED INEQUALITIES

by **George A Anastassiou** (*University of Memphis, USA*)

This monograph presents univariate and multivariate classical analyses of advanced inequalities. This treatise is a culmination of the author's last thirteen years of research work. The chapters are self-contained and several advanced courses can be taught out of this book. Extensive background and motivations are given in each chapter with a comprehensive list of references given at the end. The topics covered are wide-ranging and diverse. Recent advances on Ostrowski type inequalities, Opial type inequalities, Poincare and Sobolev type inequalities, and Hardy–Opial type inequalities are examined. Works on ordinary and distributional Taylor formulae with estimates for their remainders and applications as well as Chebyshev–Grüss, Grüss and Comparison of Means inequalities are studied.



**424pp** **Oct 2010**  
**978-981-4317-62-7** **US\$112** **£69**  
**978-981-4317-63-4(ebook)** **US\$146**



Advanced Series on Statistical Science and Applied Probability - Vol. 13

## CHANGE OF TIME AND CHANGE OF MEASURE

by **Ole E Barndorff-Nielsen** (*Aarhus University, Denmark*) & **Albert Shiryaev** (*Steklov Mathematical Institute, Russia & Moscow State University, Russia*)

This book provides a comprehensive account of two topics that are of particular significance in both theoretical and applied stochastics: random change of time and change of probability law.

**Contents:** Random Change of Time; Integral Representations and Change of Time in Stochastic Integrals; Semimartingales: Basic Notions, Structures, Elements of Stochastic Analysis; Stochastic Exponential and Stochastic Logarithm. Cumulant Processes; Processes with Independent Increments. Lévy Processes; Change of Measure. General Facts; Change of Measure in Models Based on Lévy Processes; and other topics.



**324pp** **Nov 2010**  
**978-981-4324-47-2** **US\$70** **£43**

Advanced Series on Statistical Science and Applied Probability - Vol. 14

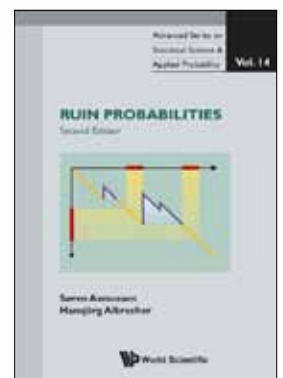
## RUIN PROBABILITIES

**Second Edition**

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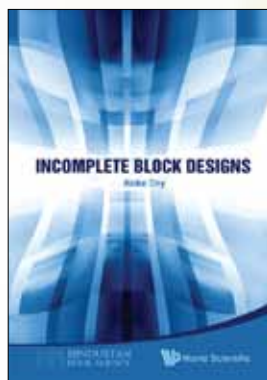
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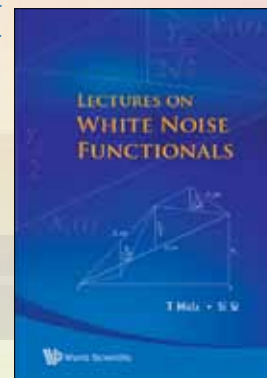


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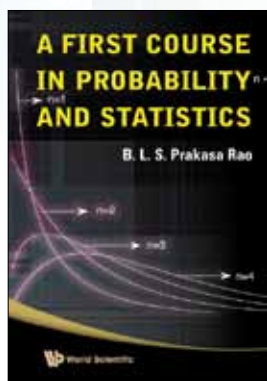
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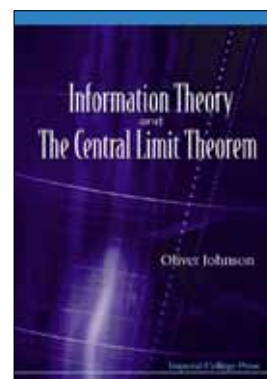
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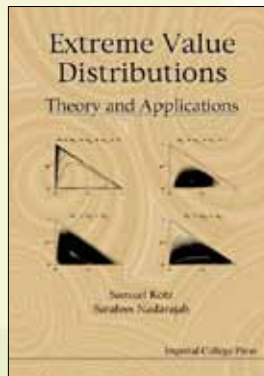
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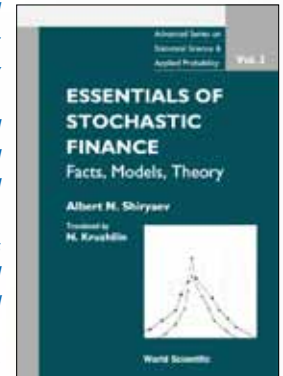
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