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Kapitel: Probabilités et processus stochastiques

polynomial of links in homology 3-spheres. At the end of the book, the author describe the recent results of G. Meng, C.H. Taubes and the author on the connections between the refined torsions and the Seiberg-Witten invariant of 3-manifolds.

Probabilités et processus stochastiques

Marek CAPIŃSKI, Tomasz ZASTAWNIAK. — **Probability through problems.** — Problem books in mathematics. — Un vol. relié, 16,5×24, de VIII, 257 p. — ISBN 0-387-95063-X. — Prix: DM 109.00. — Springer, New York, 2001.

This book of problems has been designed to accompany an undergraduate course in probability. The only prerequisite are basic algebra and calculus. Each chapter is divided into three parts: problems, hints, and solutions. To make the book self-contained, all problem sections include expository material. Definitions and statements of important results are interlaced with relevant problems. The problems have been selected to motivate abstract definitions by concrete examples and to lead in manageable steps toward general results, as well as to provide exercises based on the issues and techniques introduced in each chapter. The book is intended as a challenge to involve students as active participants in the course.

Michael DEMUTH, Jan A. VAN CASTEREN. — **Stochastic spectral theory for selfadjoint Feller operators: a functional integration approach.** — Probability and its applications. — Un vol. relié, 16×24, de XII, 463 p. — ISBN 3-7643-5887-4. — Prix: SFr. 168.00. — Birkhäuser, Basel, 2000.

A beautiful interplay between probability theory (Markov processes, martingale theory) on the one hand and operator and spectral theory on the other yields a uniform treatment of several kinds of Hamiltonians such as the Laplace operator, relativistic Hamiltonian, Laplace-Beltrami operator, and generators of Ornstein-Uhlenbeck processes. For such operators regular and singular perturbations of order zero and their spectral properties are investigated. A complete treatment of the Feynman-Kac formula is given. The theory is applied to such topics as compactness or trace class properties of differences of Feynman-Kac semigroups, preservation of absolutely continuous and/or essential spectra and completeness of scattering systems.

Evarist GINÉ, David M. MASON, Jon A. WELLNER, (Editors). — **High dimensional probability II.** — Un vol. relié, 16×24, de X, 510 p. — ISBN 0-8176-4160-2. — Prix: SFr. 198.00. — Birkhäuser, Boston, 2000.

High dimensional probability is a rapidly growing field. Many new ideas, results, and directions in this evolving subject are explored in this volume, an outgrowth of the Second International Conference on High Dimensional Probability, held at the University of Washington, Seattle. The notion of high dimensional probability, as represented by these papers, encompasses a wide range of topics in both statistics and probability theory, centering around the development and application of powerful methods in the areas of probability on Banach spaces, Gaussian process theory, and strong and distributional approximation. Considered as a whole, this work provides researchers and graduate students with a fine introduction to the strength and applicability of these methods. Topics covered include: exponential and moment inequalities for a variety of processes, estimates for Gaussian processes, limit theorems for sums of independent random vectors and empirical processes, strong approximation and embedding in arbitrary dimensions, multidimensional distribution theory, statistical function estimation, multivariate statistics.

Takeyuki HIDA, Rajeeva L. KARANDIKAR, Hiroshi KUNITA, Balram S. RAJPUT, Shinzo WATANABE, Jie XIONG, (Editors). — **Stochastics in finite and infinite dimensions: in honor of Gopinath Kallianpur.** — Trends in mathematics. — Un vol. relié, 16,5×24, de XXXIV, 410 p. — ISBN 0-8176-4137-8. — Prix: SFr. 198.00. — Birkhäuser, Boston, 2001.

During the last fifty years, Gopinath Kallianpur has made extensive significant contributions to diverse areas of probability and statistics, including stochastic finance, Fisher consistent estimation, non-linear prediction and filtering problems, zero-one laws for Gaussian processes and reproducing kernel Hilbert space theory, and stochastic differential equations in infinite dimensions. To honor Kallianpur's pioneering work and scholarly achievements, a number of leading experts have written research articles highlighting progress and new directions of research in these and related areas. This commemorative volume, dedicated to Kallianpur on the occasion of his seventy-fifth birthday, will pay tribute to his multi-faceted achievements and to the deep insight and inspiration he has so graciously offered his students and colleagues throughout his career.

N. LIMNIOS, M. NIKULIN, (Editors). — **Recent advances in reliability theory: methodology, practice, and inference.** — Statistics for industry and technology. — Un vol. relié, 18,5×26, de XXV, 514 p. — ISBN 0-8176-4135-1. — Prix: SFr. 148.00. — Birkhäuser, Boston, 2000.

This book presents thirty-one extensive and carefully edited chapters providing an up-to-date survey of new models and methods for reliability analysis and applications in science, engineering, and technology. The chapters contain broad coverage of the latest developments and innovative techniques in a wide range of theoretical and numerical issues in the field of statistical and probabilistic methods in reliability. The book is organized into eight thematic parts: General approach; probability models and related issues; asymptotic analysis; statistical models and data analysis; software reliability; statistical inference and asymptotic methods in statistics.

Rolando REBOLLEDO, (Editor). — **Stochastic analysis and mathematical physics: ANESTOC'98.** — Proceedings of the Third International Workshop. — Trends in mathematics. — Un vol. relié, 16,5×24, de VIII, 166 p. — ISBN 0-8176-4185-8. — Prix: SFr. 108.00. — Birkhäuser, Boston, 2000.

This work highlights emergent research in the area of quantum probability. Several papers present a qualitative analysis of quantum dynamical semigroups and new results on q-deformed oscillator algebras, while others stress the application of classical stochastic processes in quantum modeling. All of the contributions have been thoroughly refereed and are an outgrowth of an International Workshop in Stochastic Analysis and Mathematical Physics. The book targets an audience of mathematical physicists as well as specialists in probability theory, stochastic analysis, and operator algebras.

Philippe ROBERT. — **Réseaux et files d'attente: méthodes probabilistes.** — Mathématiques & applications, vol. 35. — Un vol. broché, 15,5×23,5, de XII, 368 p. — ISBN 3-540-67872-7. — Prix: SFr. 104.00. — Springer, Paris, 2000.

Ce livre présente une catégorie de modèles probabilistes regroupés sous le nom de réseaux ou systèmes de files d'attente. Ces modèles interviennent dans de nombreuses applications, comme les réseaux de télécommunication ou les réseaux informatiques. Sur le plan théorique ils sont à la source d'une large classe de problèmes: marches aléatoires et diffusions réfléchies, processus ponctuels, etc. Ce livre présente les techniques probabilistes qui permettent d'étudier

le comportement qualitatif de ces modèles: existence de régimes stationnaires, caractérisation du comportement à l'équilibre, étude asymptotique du comportement transitoire (événements rares) et des régimes critiques (saturation)...

Statistique

John J. BENEDETTO, Paulo J.S.G. FERREIRA, (Editors). — **Modern sampling theory: mathematics and applications.** — Un vol. relié, 16,5×24, de XVI, 417 p. — ISBN 0-8176-4023-1. — Prix: SFr. 168.00. — Birkhäuser, Boston, 2001.

Sampling is a fundamental topic in the engineering and physical sciences. This book focuses on recent mathematical methods and theoretical developments, as well as some current central applications of the Classical Sampling Theorem. The Classical Sampling Theorem, which originated in the 19th century, is often associated with the names of Shannon, Kotelnikov, and Whittaker; and one of the features of this book is an English translation of the pioneering work in the 1930s by Kotelnikov, a Russian engineer. Following a technical overview and Kotelnikov's article, the book includes a wide and coherent range of mathematical ideas essential for modern sampling techniques.

Karlheinz GRÖCHENIG. — **Foundations of time-frequency analysis.** — Applied and numerical harmonic analysis. — Un vol. relié, 16×24, de XV, 359 p. — ISBN 0-8176-4022-3. — Prix: SFr. 128.00. — Birkhäuser, Boston, 2001.

For many years time frequency analysis has been pursued mainly in engineering, but recently, and with the development of wavelet theory, it has emerged as a thriving field of applied mathematics. This book presents the first systematic introduction to time-frequency analysis understood as a central area of applied harmonic analysis, while at the same time honoring its interdisciplinary origins. Important principles are (a) classical Fourier analysis as a tool that is central in modern mathematics, (b) the mathematical structures based on the operations of translation and modulations (i.e. the Heisenberg group), (c) the many forms of the uncertainty principle, and (d) the omnipresence of Gaussian functions, both in the methodology of proofs and in important statements.

Cheng HSIAO, Kimio MORIMUNE, James L. POWELL, (Editors). — **Nonlinear statistical modeling.** — Proceedings of the Thirteenth International Symposium in Economic Theory and Econometrics: Essays in Honor of Takeshi Amemiya. — International Symposia in Economic Theory and Econometrics. — Un vol. relié, 16,5×23,5, de XVIII, 452 p. — ISBN 0-521-66246-X. — Prix: £55.00. — Cambridge University Press, Cambridge, 2001.

This collection brings together important contributions by leading econometricians on parametric approaches to qualitative and sample selection models, nonparametric and semi-parametric approaches to qualitative and sample selection models, and nonlinear estimation of cross-sectional and time series models. The advances achieved here can important bearing on the choice of methods and analytical techniques in applied research. This collection is dedicated to Professor Takeshi Amemiya in honor of his path-breaking contributions to econometrics and statistics.

Donald B. PERCIVAL, Andrew T. WALDEN. — **Wavelet methods for time series analysis.** — Cambridge series in statistical and probabilistic mathematics. — Un vol. relié, 18,5×25, de XXV, 594 p. — ISBN 0-521-64068-7. — Prix: £40.00. — Cambridge University Press, Cambridge, 2000.

Data in the form of time series are routinely collected in science, engineering, and other areas such as finance and economics. This is an introduction to wavelet analysis 'from the