

Probabilités et processus stochastiques

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Andrei MARSHAKOV. — **Seiberg-Witten theory and integrable systems.** — Un vol. broché, 15,5 × 22, de 253 p. — ISBN 981-02-3637-9. — Prix: £ 16.00. — World Scientific, Singapore, 1999.

SUSY Yang-Mills theories. — Integrable systems. — Integrable equations in 2D topological string theories. — The Seiberg-Witten Ansatz. Generating differential and Whitham hierarchy. — Prepotential of the Seiberg-Witten theory. — Seiberg-Witten theory from strings. — Appendices: Riemann surfaces and theta-functions. KP hierarchy and theory of free fermions. Residue formula for the $N = 2$ Calogero-Moser system. Algebra of differentials for the Calogero-Moser system. Explicit derivation in elliptic case.

A. STASIAK, V. KATRITCH, L.H. KAUFFMAN, (Editors). — **Ideal knots.** — Series on knots and everything, vol. 19. — Un vol. relié, 16 × 22,5, de x, 414 p. — ISBN 981-02-3530-5. — Prix: £ 31.00. — World Scientific, Singapore, 1998.

In this book, experts in different fields of mathematics, physics, chemistry and biology present unique forms of knots which satisfy certain preassigned criteria relevant to a given field. They discuss the shapes of knotted magnetic flux lines, the forms of knotted arrangements of bistable chemical systems, the trajectories of knotted solitons, and the shapes of knots which can be tied using the shortest piece of elastic rope with a constant diameter. — *Contents*: Ideal knots and their relation to the physics of real knots (A. Stasiak et al.), Knots with minimal energies (Y. Diao et al.), The writhe of knots and links (E. J. Janse van Rensburg et al.), Entropy of a knot: simple arguments about difficult problem (A. Yu. Grosberg), Knots and fluid dynamics (H. K. Moffatt), Möbius-invariant knot energies (R. B. Kusner & J. M. Sullivan), Fourier knots (L. H. Kauffman), and other papers.

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Rodrigo BAÑUELOS, Charles N. MOORE. — **Probabilistic behavior of harmonic functions.** — Progress in mathematics, vol. 175. — Un vol. relié, 16 × 24, de xiv, 204 p. — ISBN 3-7643-60602-3. — Prix: SFr. 98.00. — Birkhäuser, Basel, 1999.

The primary focus of the text is the nontangential maximal function and the area function of a harmonic function and their probabilistic analogues in martingale theory. The text first gives the requisite background material from harmonic analysis and discusses known results concerning the nontangential maximal function and area function, as well as the central and essential role these have played in the development of the field. The book next discusses further refinements of traditional results: among these are sharp good-lambda inequalities and laws of the iterated logarithm involving nontangential maximal functions and area functions. Many applications of these results are given.

Hans CRAUEL, Matthias GUNDLACH, (Editors). — **Stochastic dynamics.** — Un vol. relié, 16 × 24, de xvii, 440 p. — ISBN 0-387-98512-3. — Prix: DM 129.00. — Springer, New York, 1999.

This volume gives an account of new and recent developments in the theory of random and, in particular, stochastic dynamical systems. Its purpose is to document and, to some extent, summarize the current state of the field of random dynamical systems beyond the recent monograph *Random Dynamical Systems* by Ludwig Arnold. Recent results on stochastic bifurcation, hyperbolic systems, numerics and asymptotics, more general driving processes for stochastic differential equations, and stochastic analysis on infinite-dimensional manifolds are presented in a comprehensible manner. Several new and exciting insights into the unexpected variety of dynamical behaviors resulting from influence of stochastic perturbations are conveyed to the reader.

G. LATOUCHE, V. RAMASWAMI. — **Introduction to matrix analytic methods in stochastic modeling.** — Un vol. broché, 18×25, de xiv, 334 p. — ISBN 0-89871-425-7. — Prix: US\$49.50. — Society for Industrial and Applied Mathematics, Philadelphia, 1999.

The authors begin by describing several examples of quasi-birth-and-death (QBD) processes. The second part of the book deals with phase-type distributions and related-point processes, which provide a versatile set of tractable models for applied probability. Part three reviews birth-and-death processes, and points out that the arguments for these processes carry over to more general processes in a parallel manner and are based on Markov renewal theory. Part four covers material where algorithmic and probabilistic reasoning are most intimately connected. The final part goes beyond simple QBDs with a sequence of short chapters where the authors discuss various extensions to the analyzed processes.

Jean-Philippe RÉAU, Gérard CHAUVAT. — **Probabilités et statistiques: résumé des cours, exercices et problèmes corrigés, QCM.** — 4^e édition. — Cursus Economie. — Un vol. broché, 16×24, de 207 p. — ISBN 2-200-25076-2. — Prix: FF 94.00. — Armand Colin, Paris, 1999, diffusé en Suisse par Havas Services Suisse, Fribourg.

L'exposition du contenu de cet ouvrage est méthodique et progressive pour assurer au lecteur un entraînement personnel tout au long de l'année, une révision systématique du programme, et une préparation optimale aux examens et concours. La présentation pédagogique et pratique comprend des résumés de cours et des rappels de notions de base, des exercices d'application suivis de leurs solutions complètes, des problèmes avec des solutions commentées, des thèmes de récapitulation inspirés de sujets récents d'examens.

Aris SPANOS. — **Probability theory and statistical inference: econometric modeling with observational data.** — Un vol. broché, 17,5×25, de xxvii, 815 p. — ISBN 0-521-42408-9 (relié: 0-521-41354-0). — Prix: £24.95 (relié: £60.00). — Cambridge University Press, Cambridge, 1999.

The primary objective of this book is to establish the framework for the empirical modeling of observational (non-experimental) data. This framework known as probabilistic reduction is formulated with a view to accommodating the peculiarities of observational (as opposed to experimental) data in a unifying and logically coherent way. This book differs from traditional textbooks in so far as it emphasizes concepts, ideas, notions, and procedures which are appropriate for modeling observational data. No prior knowledge other than a basic familiarity with descriptive statistics is assumed. Aimed primarily at students studying econometrics and economics, this textbook will also be useful for students in other disciplines which make extensive use of observational data.

David STIRZAKER. — **Probability and random variables: a beginner's guide.** — Un vol. broché, 17,5×25, de xii, 368 p. — ISBN 0-521-64445-3. — Prix: £16.95. — Cambridge University Press, Cambridge, 1999.

After an elementary discussion of chance, the central and crucial rules and ideas of probability including independence and conditioning are set out. Counting, combinatorics and the ideas of probability distributions and densities are then introduced. Later chapters present random variables and examine independence, conditioning, covariance and functions of random variables, both discrete and continuous. The final chapter considers generating functions and applies this concept to practical problems including branching processes, random walks and the central limit theorem. Examples, demonstrations and exercises are used throughout to explore the ways in which probability is motivated by, and applied to, real-life problems in science, medicine, gaming and other subjects of interest. Essential proofs of important results are included.