

# Probabilités et processus stochastiques

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Vladimir Y. ROVENSKII. — **Foliations of Riemannian manifolds and submanifolds.** — Un vol. relié, 16,5×24,5, de x, 286 p. — ISBN 0-8176-3806-7. — Prix: SFr. 138.00. — Birkhäuser, Boston, 1998.

The ideas and methods of foliations are very popular in mathematics and its applications. The key problem of this volume is the role of a Riemannian curvature in studies of manifolds and submanifolds with foliations. Rovenskii discusses the results of many geometers, but the book principally focuses on his own investigations into the Riemannian geometry of foliations and submanifolds with generators having nonnegative curvature. The main idea is that such manifolds are decomposed into a direct product when the dimension of leaves is sufficiently large.

Tatsuo SUWA. — **Indices of vector fields and residues of singular holomorphic foliations.** — Actualités mathématiques. — Un vol. broché, 17,5×24, de VIII, 204 p. — ISBN 2-7056-6361-4. — Prix: FF 210.00. — Hermann, Paris, 1998.

Vector fields arise naturally in many branches of mathematics. An interesting problem in geometry is to study the relation between the structure of the space and the property of vector fields that can exist on it. A typical example is the classical Poincaré-Hopf theorem, which relates the local indices of a vector field and the Euler-Poincaré characteristic of the manifold. More generally, we come up with foliations when we consider involutive systems of vector fields. For a holomorphic foliation, we have more local invariants (residues) associated to its singularity, as initially discovered by P. Baum and R. Bott. Also, for an invariant subvariety of the foliation we have other types of residues, including the Camacho-Sad index, which play a significant role in the study of invariant subvarieties. In this book these invariants are treated systematically and generalized to the ones for vector fields and holomorphic foliations on singular varieties.

Masaya YAMAGUTI, Masayoshi HATA, and Jun KIGAMI. — **Mathematics of fractals.** — Translations of mathematical monographs, vol. 167. — Un vol. relié, 18×26, de XI, 78 p. — ISBN 0-8218-0537-1. — Prix: £19.50. — American Mathematical Society, Providence R.I., distributed by Oxford University Press, Oxford, 1997.

This book aims at providing a handy explanation of the notions behind the self-similar sets called “fractals” and “chaotic dynamical systems”. The authors emphasize the beautiful relationship between fractal functions (such as Weierstrass’s) and chaotic dynamical systems; these nowhere-differentiable functions are generating functions of chaotic dynamical systems. These functions are shown to be in a sense unique solutions of certain boundary problems. The last chapter of the book treats harmonic functions on fractal sets.

## ***Probabilités et processus stochastiques***

A.A. BOROVKOV. — **Ergodicity and stability of stochastic processes.** — Translated by V. Yurinsky. — Wiley series in probability and statistics. — Un vol. relié, 16×23,5, de XXIII, 585 p. — ISBN 0-471-97913-9. — Prix: £85.00.— John Wiley & Sons, Chichester, 1998.

Comprising three parts, the first demonstrates the general theorems of ergodicity and stability for a comprehensive number of classes of Markov chains, stochastically recursive sequences and their generalizations. Expanding on the introduction, the second part considers ergodicity and stability of multi-dimensional Markov chains and Markov processes. For one-dimensional Markov chains special attention is paid to large deviation problems and transient phenomenon. Drawing upon the results presented throughout the book the final part considers

their application in establishing conditions of ergodicity in communication and queueing networks. In particular, two types of polling systems are considered; Jackson networks and buffered random access systems related to the ALOHA algorithm.

Anton BOVIER, Pierre PICCO, (Editors). — **Mathematical aspects of spin glasses and neural networks.** — Progress in probability, vol. 41. — Un vol. relié, 16,5 × 24, de VIII, 382 p. — ISBN 0-8176-3863-6. — Prix: SFr. 178.00. — Birkhäuser, Boston, 1998.

Spin glass theory has been an extremely active field of research in both experimental and theoretical physics for many years. Soon after introduction of the first spin glass models, the close relationship between spin glasses and certain aspects of the theory of neural networks was discovered. The aim of this book is to provide a concise reference to the mathematical progress that has been made on the interaction between these two concepts. It provides the researcher or beginning graduate student with a survey of some of the most important developments as focused on intrinsically spin glass aspects.

Norbert HENZE, Hans RIEDWYL. — **How to win more: strategies for increasing a lottery win.** — Un vol. broché, 13 × 20,5, de x, 149 p. — ISBN 1-56881-078-4. — Prix: US\$ 15.95. — A.K. Peters, Wellesley, Mass., 1998.

This book is designed to provide valuable insight into how to improve the return on your investment when playing the lottery. While it does not promise that you will win more often, it does show you to improve the odds of winning larger sums when your numbers come up. So, when you finally do win that million dollar jackpot, you will be less likely to have to share it with anyone else.

Josef HOFBAUER, Karl SIGMUND. — **Evolutionary games and population dynamics.** — Un vol. broché, 17 × 24,5, de XXVII, 323 p. — ISBN 0-521-62365-0 (relié), 0-521-62570-X (broché). — Prix: £ 16.95 (relié: £ 50.00). — Cambridge University Press, Cambridge, 1998.

In this book the authors investigate the nonlinear dynamics of the self-regulation of social and economic behaviour, and of the closely related interactions between species in ecological communities. Replicator equations describe how successful strategies spread and thereby create new conditions which can alter the basis of their success, i.e. to enable us to understand the strategic and genetic foundations of the endless chronicle of invasions and extinctions which punctuate evolution. In short, evolutionary game theory describes when to escalate a conflict, how to elicit cooperation, why to expect a balance of the sexes, and how to understand natural selection in mathematical terms.

Yu.M. KABANOV, B.L. ROZOVSKII, A.N. SHIRYAEV, (Editors). — **Statistics and control of stochastic processes. The Lipster Festschrift.** — Steklov Mathematical Institute, 1995-1996. — Proceedings of Steklov Mathematical Institute Seminar. — Un vol. relié, 156 × 23, de XXI, 354 p. — ISBN 981-02-3292-6. — Prix: £ 60.00. — World Scientific, Singapore, 1997

Yu. M. Kabanov *et al.*: Robert Liptser. — A. Dembo, O. Zitouni: Moderate deviations for iterates of expanding maps. — N.G. Duffield *et al.*: The branching diffusion approximation for a model of a synchronized queueing network. — K. Dzharparidze *et al.*: On Hellinger processes for parametric families of experiments. — I.V. Evstigneev, S. Flåm: The turnpike property and

the central limit theorem in stochastic models of economic dynamics. — S. Frason, W.J. Runngaldier: A stochastic control model for hedging in incomplete markets. — L. Galtchouk, V. Konev: On sequential estimation of parameters in continuous-time stochastic regression. — M Huebner *et al.*: Asymptotic properties of an approximate maximum likelihood estimator for stochastic PDEs. — P. Imkeller: Enlargement of the Wiener filtration by a manifold valued random element via Malliavin's calculus. — etc...

Yu A. ROZANOV. — **Random fields and stochastic partial differential equations.** — Mathematics and its applications, vol. 438. — Un vol. relié, 16,5×25, de VII, 229 p. — ISBN 0-7923-4984-9. — Prix: Dfl. 195.00. — Kluwer Academic Publishers, Dordrecht, 1998.

This book considers some models described by means of partial differential equations and boundary conditions with chaotic stochastic disturbance. In a framework of stochastic partial differential equations an approach is suggested to generalize solutions of stochastic boundary problems. The main topic concerns probabilistic aspects with applications to the most well-known random fields models which are representative for the corresponding stochastic Sobolev spaces.

## *Statistique*

D.R. BRILLINGER, L.T. FERNHOLZ, S. MORGENTHALER, (Editors). — **The practice of data analysis: essays in honor of John W. Tukey.** — Un vol. relié, 16,5×24, de VIII, 337 p. — ISBN 0-691-05782-6. — Prix: US\$49.50. — Princeton University Press, Princeton, 1998.

This book honors John W. Tukey, one of the most influential statisticians of the twentieth century, on the occasion of his eightieth birthday. Contributors, some of them Tukey's former students, use his general theoretical work and his specific contributions to Exploratory Data Analysis as the point of departure for their papers. They cover topics from "pure" data analysis, such as gaussianizing transformations and regression estimates, and from "applied" subjects, such as the best way to rank the abilities of chess players or to estimate the abundance of birds in a particular area.

Ian L. DRYDEN, Kanti V. MARDIA. — **Statistical shape analysis.** — Wiley series in probability and statistics. — Un vol. relié, 16×23,5, de XVII, 347 p. — ISBN 0-471-95816-6. — Prix: £60.00. — John Wiley, Chichester, 1998.

This book involves methods for the geometrical study of random objects where location, rotation and scale information can be removed. It lays the foundations of the subject discussing key ideas and the very latest developments, as well as offering practical guidance and comparisons of techniques. The text primarily concentrates on landmark data – key points of correspondence located on each object. Careful consideration of the similarity invariances requires methods appropriate for non-Euclidean data analysis. In particular, multivariate statistical procedures cannot be applied directly, but can be adapted in certain instances.

B.S. EVERITT. — **The Cambridge dictionary of statistics.** — Un vol. relié, 18×25, de VIII, 360 p. — ISBN 0-521-59346-8. — Prix: £19.95. — Cambridge University Press, 1998.

Some 3000 terms are defined in all areas of statistics, including medical, survey, theoretical, applied and so on. In addition short biographies are given of over 100 important statisticians. The majority of definitions include a reference to a book or article where the reader can seek an