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Probabilités et processus stochastiques

I. BERKES, E. CSÁKI, M. CSÓRGÓ, (Editors). — **Limit theorems in probability and statistics.** — 2 vol. reliés, 17×24, de respectivement, 569 p. et 573 p. — ISBN 963-9453-013 (vol. 1 et 2). — János Bolyai Mathematical Society, Budapest, 2002.

The fourth Hungarian Colloquium on Limit Theorems in Probability and Statistics, organized by the János Bolyai Mathematical Society and the Alfréd Rényi Institute of Mathematics of the Hungarian Academy of Sciences, was held in Balatonlelle, Hungary, June 28-July 2, 1999. These volumes reflect the wide ranging and ever growing interest of researchers world-wide in limit theorems in probability and statistics in general, as well as the vigorous presence and impact of the achievements of the Hungarian school of probabilists and statisticians in particular. Most befittingly then in this regard, the meeting in Balatonlelle provided a special opportunity to honour the work of Pál Révész on the occasion of his 65th birthday. The present volumes contain papers that were presented at the colloquium. The topics covered include: sums of independent and weakly dependent random variables, invariance principles, large deviations, extreme value theory, empirical and quantile processes, nonparametric statistics, change-point analysis.

François DRESS. — **Probabilités et statistique pour les sciences de la vie.** — 2^e édition. — Sciences SUP. — DEUG Sciences. — TD: Travaux dirigés. — Un vol. broché, 17×24, de v, 184 p. — ISBN 2-10-006711-7. — Prix: €15.00. — Dunod, Paris, distribué par Vivendi Universal Publishing Services, Fribourg, 2002.

Cet ouvrage s'adresse aux étudiants du premier cycle. Il couvre en 214 questions et exercices les bases des probabilités et de la statistique: Probabilités élémentaires et probabilités conditionnelles, variables aléatoires. — Lois de Bernoulli, binomiale, de Poisson, normale.... — Théorie des épreuves répétées: loi des grands nombres, théorème central limite. — Statistique descriptive, estimation. — Test d'hypothèses: lois de Student, test du khi-deux. — Regression linéaire. Dans cette nouvelle édition sont traitées les bases mathématiques de la transmission des gènes et de la génétique des populations.

Onésimo HERNÁNDEZ-LERMA, Jean Bernard LASSERRE. — **Markov chains and invariant probabilities.** — Un vol. relié, 16×24, de xvi, 205 p. — ISBN 3-7643-7000-3. — Prix: SFr. 88.00. — Birkhäuser, Basel, 2003.

This book concerns discrete-time homogeneous Markov chains that admit an invariant probability measure. The main objective is to give a systematic, self-contained presentation on some key issues about the ergodic behavior of that class of Markov chains. These issues include, in particular, the various types of convergence of expected and pathwise occupation measures, and ergodic decompositions of the state space. Some of the results presented appear for the first time in book form. A distinguishing feature of the book is the emphasis on the role of expected occupation measures to study the long-run behavior of Markov chains on uncountable spaces.

Mark JERRUM. — **Counting, sampling and integrating: algorithms and complexity.** — Lectures in mathematics, ETH Zürich. — Un vol. broché, 17×24, de xi, 112 p. — ISBN 3-7643-6946-9. — Prix: SFr. 38.00. — Birkhäuser, Basel, 2003.

The subject of these notes is counting (of combinatorial structures) and related topics, viewed from a computational perspective. "Related topics" include sampling combinatorial

structures (being computationally equivalent to approximate counting via efficient reductions), evaluating partition functions (being weighted counting), and calculating the volume of bodies (being counting in the limit). A major theme of the book is the idea of accumulating information about a set of combinatorial structures by performing a random walk (i.e., simulating a Markov chain) on those structures. The running time of such an algorithm depends on the rate of convergence to equilibrium of this Markov chain, as formalised in the notion of “mixing time” of the Markov chain. A significant proportion of the volume is given over to an investigation of techniques for bounding the mixing time in cases of computational interest. For the first time this body of knowledge has been brought together in a single volume.

Rolando REBOLLEDO, (Editor). — **Stochastic analysis and mathematical physics II: 4th International ANESTOC Workshop in Santiago, Chile.** — Trends in mathematics — Un vol. relié, 17×24, de XI, 162 p. — ISBN 3-7643-6997-0. — Prix: SFr. 98.00. — Birkhäuser, Basel, 2003.

The contributions in this volume highlight emergent research in the area of stochastic analysis and mathematical physics, focussing, in particular, on quantum probability. Key topics covered include novel tools for the qualitative analysis of quantum dynamical semigroups (existence of invariant states, subharmonic projections and faithful normal invariant states, propagation of molecular chaos), and new results on quantum information and quantum large deviations. All articles have been thoroughly refereed and are an outgrowth of the International Workshop in Stochastic Analysis and Mathematical Physics held in Santiago, Chile, in January 2000. The book is addressed to an audience of mathematical physicists, as well as specialists in probability theory, stochastic analysis, and operator algebras.

Bernard YCART. — **Modèles et algorithmes markoviens.** — Mathématiques & applications, vol. 39. — Un vol. broché, 16×24, de XII, 270 p. — ISBN 3-540-43696-0. — Prix: €45.45. — Springer, Paris, 2002.

Ce livre est destiné à tous ceux, mathématiciens ou non, qui souhaitent acquérir une maîtrise pratique de l’outil probabiliste dans ses applications les plus courantes. L’élaboration d’un modèle probabiliste conduit, en dehors de cas particuliers de faible intérêt pratique, à des problèmes théoriques difficiles qui sont vite hors de portée de l’utilisateur (comme d’ailleurs souvent du probabiliste professionnel). La validation d’un tel modèle passe alors nécessairement par la simulation, qui ne met en jeu en général que des procédures extrêmement simples. Apprendre à utiliser les modèles stochastiques, écrire pour eux des programmes de simulation efficaces, prévoir leurs performances et analyser leurs résultats est l’objectif principal de ce livre.

Statistique

Phillip I. GOOD. — **Resampling methods: a practical guide to data analysis.** — Second edition. — Un vol. relié, 16×24, de XII, 238 p. — ISBN 0-8176-4243-9. — Prix: SFr. 158.00. — Birkhäuser, Boston, 2001.

This thoroughly revised second edition is a practical guide to data analysis using the bootstrap, cross-validation, and permutation tests. It is an essential resource for industrial statisticians, statistical consultants, and research professionals in science, engineering, and technology. Only requiring minimal mathematics beyond algebra, it provides a table-free introduction to data analysis utilizing numerous exercises, practical data sets, and freely available statistical software.