

Advances in Applied Probability

The Editorial Board would like to encourage the submission to the *Advances* of review papers summarising and coordinating recent results in any of the fields of applied probability.

In addition to these review papers, *Advances* is also designed to be a medium of publication for (1) longer research papers in applied probability, which may include expository material, (2) expository papers on branches of mathematics of interest to probabilists, (3) papers outlining areas in the biological, physical, social and technological sciences in which probability models can be usefully developed, (4) papers in applied probability presented at conferences which do not publish their proceedings, and finally, (5) letters to the editor on any appropriate topic in applied probability.

In short, the main function of *Advances* is to define areas of recent progress and potential development in applied probability. As with the *Journal of Applied Probability*, *Advances* undertakes to publish papers accepted by the Editors within 15 months of their submission; letters to the editor will normally be published more rapidly.

Volume 22 No. 1 of *Advances* contains the following papers:

- S. N. ETHIER. The infinitely-many-neutral-alleles diffusion model with ages
CLAUDE LEFÈVRE AND PHILIPPE PICARD. A non-standard family of polynomials and the final size distribution of Reed–Frost epidemic processes
LUIS G. GOROSTIZA AND JOSE A. LOPEZ-MIMBELA. The multitype measure branching process
MICHAEL VOIT. Central limit theorems for a class of polynomial hypergroups
B. CHAUVIN AND A. ROUAULT. A stochastic simulation for solving scalar reaction-diffusion equations
L. SACERDOTE. On the solution of the Fokker–Planck equation for a Feller process
P. K. POLLETT AND A. J. ROBERTS. A description of the long-term behaviour of absorbing continuous-time Markov chains using a centre manifold
HANS ARNFINN KARLSEN. Existence of moments in a stationary stochastic difference equation
GORDON E. WILLMOT. Asymptotic tail behaviour of Poisson mixtures with applications
MOSHE SHAKED AND J. GEORGE SHANTHIKUMAR. Convexity of a set of stochastically ordered random variables
XI-REN CAO. Realization factors and sensitivity analysis of queueing networks with state-dependent service rates
M. YA. KELBERT, R. P. KOPEIKA, R. N. SHAMSIEV AND YU. M. SUKHOV. Perturbation theory approach for a class of hybrid switching networks with small transit flows
WLADYSŁAW SZCZOTKA. Exponential approximation of waiting time and queue size for queues in heavy traffic

Subscription rates (per volume) for the *Advances* in 1990 are the same as for the *Journal* (see inside back cover). A discount of 10% is allowed to subscribers who order current issues of both the *Journal* and *Advances* at the same time direct from the Applied Probability Office. A detailed price list for both current and back issues is available on request.

Cheques made out on U.S., U.K. and Australian banks will be acceptable: they should be made payable to *Applied Probability*, and sent to:

Executive Editor, Applied Probability,
Department of Probability and Statistics,
The University, Sheffield S3 7RH, England.

APPLIED PROBABILITY NEWSLETTER

The *Applied Probability Newsletter* publishes articles of general interest (recent papers include 'The Challenge of AIDS Modelling' by J. Gani, 'Reliability Importance and Voting Power' by W. S. Griffith and 'The Stability of Stochastic Models' by S. T. Rachev), news, information, book reviews and detailed listings of forthcoming conferences. The editor invites the applied probability community to submit contributions to the *Newsletter*. All submissions are welcome, but the editor is particularly interested in the following types of contributions:

- Announcements of meetings and calls for papers
- Announcements of new journals and special issues of existing journals
- Brief, informal articles
- News of applied probabilists (e.g. changes of address, awards)
- Problems for solution
- Novel examples and applications likely to be of interest to those teaching courses in applied probability

Please send all correspondence to:

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The *Newsletter* is published biannually by the Institute of Management Sciences, 290 Westminster Street, Providence, RI 02903. Free sample copies are available on request from the editor.

CALL FOR PAPERS

THE ANNALS OF APPLIED PROBABILITY

Volume 1, Number 1, February 1991

The Institute of Mathematical Statistics will publish the first issue of its new journal, *The Annals of Applied Probability*, in February 1991.

In addition to welcoming papers in all the traditional areas of applied probability, the new *Annals* particularly hopes to attract work that develops and deepens the interplay of probability and other fields, including computer science, finance, network modeling, and biology.

Submissions are now being considered for publication and should be directed to:

J. Michael Steele, *Editor*
School of Engineering and Applied Science
E-220 Engineering Quadrangle
Princeton University
Princeton NJ 08544 (USA)

Four copies should be submitted and authors are requested to follow the instructions which appear at the front of each issue of *The Annals of Probability* or *The Annals of Statistics*.

New and Forthcoming Books from Wiley

Multi-Armed Bandit Allocation Indices

J.C. GITTINS, University of Oxford, UK

Statisticians are familiar with bandit problems, operational researchers with scheduling problems, and economists with problems of resource allocation. Most such problems are computationally intractable and cannot be solved in polynomial time – which means that accurate solutions are unobtainable except for small-scale problems. This is particularly true under conditions of uncertainty.

This book shows that there is, however, a large class of allocation problems for which the optimal solution is expressible in terms of a priority index which is defined for each of the competing projects independently of the properties of the other projects. Such problems are therefore solved once the appropriate index has been found. In some cases there is a concise formula for the index; at the worst it can usually be determined by a manageable calculation.

Contents: Introduction; Main Ideas; Central Theory; General Properties of the Indices; Jobs with Continuously-Varying Effort Allocations; Multi-Population Random Sampling (Theory); Multi-Population Random Sampling (Calculations); Search Theory; In Conclusion; References; Tables.

Wiley-Interscience Series in Systems and Optimization

0471920592 264pp January 1989 £29.95/\$57.55

Influence Diagrams, Belief Nets and Decision Analysis

Edited by R.M. OLIVER, University of California at Berkeley, USA, and J.Q. SMITH, University of Warwick, UK

Influence diagrams are a powerful tool in the modelling of practical problems. They were developed in response to the need to discuss, formulate and compute decision problems for clients. In this volume research results and applications of influence diagrams from a wide variety of different fields are presented. Contributions from many of those responsible for their original development, as well as from practitioners who have used them in developing models for problem solving are included.

Contents are divided under the following headings:- Model Formulation and Analysis; Theoretical Foundations; Problems and Applications – Industrial; Problems and Applications – Medical; Efficiency and Computational Issues.

Wiley Series in Probability and Mathematical Statistics – Applied Probability and Statistics Section

0471923818 496pp January 1990 £44.95/\$82.75

Graphical Models in Applied Multivariate Statistics

J. WHITTAKER, University of Lancaster, UK

Graphical modelling is the term used for the body of statistical techniques based on fitting graphical models to data. Its claim for recognition among traditional methods is that it has the advantages of interpretation, simplification and unification.

Contents: Introduction; Independence and Interaction; Independence Graphs; Information Divergence; The Inverse Variance; Graphical Gaussian Models; Graphical Log-Linear Models; Model Selection; Methods for Sparse Tables; Regression and Graphical Chain Models; Models for Mixed Variables; Decompositions and Decomposability; Appendices; References; Index.

Wiley Series in Probability and Mathematical Statistics – Applied Probability and Statistics Section

0471917508 approx 480pp February 1900
approx £39.95/\$73.55

Algebraic Probability Theory

I.Z. RUZSA, Hungarian Academy of Sciences, Budapest, Hungary, and G.J. SZEKELY, Eotvos Lorand University, Budapest, Hungary

A large part of probability theory is the study of operations on probability distributions, and of their convergence. The most frequently used operations, such as convolution, turn the set of distributions into a semigroup. In this book the authors show how a part of probability theory can be expressed and proved in terms of the theory of topological semigroups. An Appendix sets out necessary results from topology and measure theory. There is a substantial chronological bibliography, starting from the year 1713.

Wiley Series in Probability and Mathematical Statistics

0471918032 266pp September 1988 £29.95/\$57.55

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£28.00 for individuals belonging to a recognised scientific society.

Members of the London Mathematical Society should apply direct to the Secretary of the Society for copies of the *Journal*.

All enquiries about the *Journal*, as well as other subscriptions, should be sent to the Executive Editor, Miss M. Hitchcock, Department of Probability and Statistics. The University, Sheffield S3 7RH, England. The price of back numbers varies from volume to volume, and enquiries should be sent to the Executive Editor. Cheques, money orders, etc. should be made out to *Applied Probability*; cheques on U.S., U.K. and Australian banks will be acceptable.

NOTES FOR CONTRIBUTORS

Papers published in the *Journal* are of two kinds:

(1) *research papers* not exceeding 20 printed pages;

(2) *short communications* of a few printed pages in the nature of notes or brief accounts of work in progress.

Review papers, *longer research papers* and *letters to the editor* are published in *Advances in Applied Probability*, a companion journal. (Note: Letters relating specifically to papers which have appeared in the *Journal of Applied Probability* will continue to appear in the *Journal*.)

The editors may publish accepted papers in either journal, according to the space available, in order to meet the 15-month deadline in publication referred to below.

Submission of papers

It is a condition of publication in the *Journal of Applied Probability* that papers shall not previously have appeared elsewhere, and will not be reprinted without the written permission of the Trust. It is the policy of the *Journal* not to accept for publication papers which cannot appear in print within 15 months of the date of receipt of the final version. Authors will receive 50 reprints of their papers free, and joint authors a proportional share of this number. Additional reprints will be provided at cost.

Papers should be written in English or French; papers in other languages may be accepted by the editors, but will appear (subject to the author's agreement) in English or French translation in the *Journal*. Scripts should be typewritten, using double spacing, and at least one copy should be on one side of the paper only. Each paper should be accompanied by

(i) a short abstract of approximately 4–10 lines giving a non-mathematical description of the subject matter and results;

(ii) a list of keywords detailing the contents for the purpose of computerised information retrieval.

Authors are advised to consult *The Author's Guide to the Applied Probability Journals* when preparing papers for submission. A copy of this guide may be obtained on application to the Applied Probability Office.

For efficiency in processing, authors are requested to send three copies of all submissions to the Applied Probability Office in Sheffield, rather than to individual editors. Authors overseas are asked to ensure that their submissions are sent by airmail. The Editor-in-Chief and the Applied Probability Office are in regular contact and full details of all papers submitted are available to Professor Heyde at The Australian National University in Canberra.

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Volume 27 Number 1

Research Papers

- 1 R. D. ROUTLEDGE. Spatial patterns arising from plant dispersal as modelled by a correlated random walk
- 14 B. PITTEL. On a Daley–Kendall model of random rumours
- 28 JENNIE C. HANSEN. A functional central limit theorem for the Ewens sampling formula
- 44 JAMES A. BUCKLEW, PETER NEY AND JOHN S. SADOWSKY. Monte Carlo simulation and large deviations theory for uniformly recurrent Markov chains
- 60 O. L. V. COSTA. Stationary distributions for piecewise-deterministic Markov processes
- 74 PETER G. HARRISON. Laplace transform inversion and passage-time distributions in Markov processes
- 88 SÁNDOR CSÖRGŐ AND JEF L. TEUGELS. Empirical Laplace transform and approximation of compound distributions
- 102 A. BUONOCORE, V. GIORNO, A. G. NOBILE AND L. M. RICCIARDI. On the two-boundary first-crossing-time problem for diffusion processes
- 115 J. GEORGE SHANTHIKUMAR AND HUI-WEN KOO. On uniform conditional stochastic order conditioned on planar regions
- 124 VIJAY K. GUPTA, OSCAR J. MESA AND E. WAYMIRE. Tree-dependent extreme values: the exponential case
- 134 MATTHIAS FASSBENDER. Optimal stationary strategies in leavable Markov decision processes
- 146 P. WHITTLE. A construction for multi-modal processes, and a potential memory device
- 156 R. J. BHANSALI. On a relationship between the inverse of a stationary covariance matrix and the linear interpolator
- 171 JANE L. HUTTON. Non-negative time series models for dry river flow
- 183 GRACE L. YANG. A renewal look at switching rules in the MIL-STD-105D sampling system
- 193 NADER EBRAHIMI. Ordering of repairable systems

Short Communications

- 202 JOSEPH KUPKA. The distribution and moments of the number of components of a random function
- 208 ANDREAS BRANDT, MANFRED BRANDT AND HANNELORE SULANKE. A representation of a discrete distribution by its binomial moments
- 215 K. D. GLAZEBROOK. Procedures for the evaluation of strategies for resource allocation in a stochastic environment
- 221 B. DIMITROV AND Z. KHALIL. On a new characterization of the exponential distribution related to a queueing system with an unreliable server
- 227 JACQUELINE LORIS-TEGHEM. On a decomposition result for a class of vacation queueing systems
- 232 SAEED GHAHRAMANI. On remaining full busy periods of $GI/G/c$ queues and their relation to stationary point processes
- 237 Acknowledgement
- 238 Correction