JOURNAL OF APPLIED PROBABILITY

VOLUME 37

NUMBER 2

JUNE 2000



EDITOR-IN-CHIEF C. C. HEYDE FOUNDING EDITOR (1964–1989) J. GANI

JOURNAL OF APPLIED PROBABILITY

This is an international journal published by the Applied Probability Trust in association with the London Mathematical Society; it contains research papers and notes on applications of probability theory to the biological, physical, social and technological sciences. An annual volume of approximately 1200 pages is published in four issues appearing in March, June, September and December.

EDITORIAL BOARD

Editor-in-Chief

C. C. HEYDE (Columbia University and Australian National University)

Coordinating Editors

N. H. BINGHAM (University of London) M. F. NEUTS (University of Arizona)

EDITORS

R. J. ADLER (Technion, Haifa)

A. J. BADDELEY (University of Western Australia) P. BRÉMAUD (Ecole Polytechnique, Palaiseau)

C. CANNINGS (University of Sheffield)
E. ÇINLAR (Princeton University)

D. J. DALEY (Australian National University)
P. J. DONNELLY (University of Oxford)

P. EMBRECHTS (ETH, Zurich) A. HORDIJK (University of Leiden)

P. JAGERS (Chalmers University of Technology and University of Göteborg)

S. JANSON (Uppsala University)

G. KERSTING (University of Frankfurt)
J. F. C. KINGMAN (University of Bristol)

C. KLÜPPELBERG (Munich University of Technology)

T. MIKOSCH (University of Groningen)
S. I. RESNICK (Cornell University)

J. L. TEUGELS (Catholic University, Louvain) R. L. TWEEDIE (University of Minnesota) D. VERE-JONES (University of Wellington)

W. WHITT (AT&T Laboratories, Florham Park, NJ)

EDITORIAL OFFICE

Executive Editor Technical Editor LINDA J. NASH (University of Sheffield) MARIA L. KELLY (University of Sheffield)

All correspondence relating to the submission of papers should be sent to: Executive Editor, Applied Probability, School of Mathematics and Statistics, The University, Sheffield S3 7RH, UK. Subscription rates and notes for contributors are to be found on the inside back cover.

ROLLO DAVIDSON TRUST

The Trustees of the Rollo Davidson Trust give notice that they have awarded Rollo Davidson Prizes for 2000 as follows:

Kurt Johansson (Royal Institute of Technology, Stockholm) for his work in understanding the Tracey–Widom distribution in a remarkable range of contexts including longest increasing subsequences and random matrices, and

David Wilson (Microsoft Research) for his work in discrete probability and computer algorithms, and in particular exact simulatin and coupling from the past.

The Mathematical Scientist

Edited by J. M. Gani

Providing an unusual non-specialist forum for papers with a mathematical emphasis, *The Mathematical Scientist* has an appreciative readership amongst mathematicians, computer scientists, statisticians and scientists in all areas where mathematical techniques are used.

Now in its 25th year of publishing, *The Mathematical Scientist* is an invaluable source of information on mathematical theory, methods and modelling applied to phenomena in the engineering, earth, physical, biomedical and socioeconomic sciences.

Recent and forthcoming papers include:

- Epidemic models and social networks Hakan Andersson
- Stable Paretian models in econometrics Svetlozar T. Rachev, Jeong-Ryeol Kim and Stefan Mittnik
- The estimation of the hazard ratio in clinical trials and in meta-analysis W. F. Scott
- A simple immigration-catastrophe process Randall Swift
- An evaluation of some gambling strategies Surekha Mudivarthy and M. Bhaskhara Rao

The Mathematical Scientist ISSN 0312 3685 Published in June and December

Subscription rates (post free) for individuals and institutions for Vol 25 (2000): £11.00, US\$18.15, Aus\$28.60. To subscribe, please contact s.e.court@sheffield.ac.uk, or send order payable to *The Mathematical Scientist*, to:

Applied Probability, School of Mathematics and Statistics, The University, Sheffield S3 7RH, UK, tel. +44(0)114 222 3922, fax +(0)114 272 9782.

For more information visit our website http://www.shef.ac.uk/~apt/



FORTHCOMING PAPERS

ABRAHAM, B. and BALAKRISHNA, N. Estimation of limiting availability for a stationary bivariate process

ADELL, JOSÉ A. and LEKUONA, ALBERTO Taylor's formula and preservation of generalised convexity for positive linear operators

ALTMAN, EITAN, BHULAI, SANDJAI, GAUJAL, BRUNO and HORDIJK, ARIE Open-loop routeing to M parallel servers with no buffers

ASSAF, DAVID, GOLDSTEIN, LARRY and SAMUEL-CAHN, ESTER An unexpected connection between branching processes and optimal stopping

BELYAEV, YURI and SJÖSTEDT-DE LUNA, SARA Weakly approaching sequences of random distributions

BOUTSIKAS, MICHAEL V. and KOUTRAS, MARKOS V. Generalized reliability bounds for coherent structures

BREMAUD, PIERRE An insensitivity property of Lundberg's estimate for delayed claims

BROWNING, SHARON A Monte Carlo approach to calculating probabilities for continuous identity by descent data

BRUN, OLIVIER and GARCIA, JEAN-MARIE Analytical solution of finite capacity M/D/1 queues

CHA, JI HWAN On a better burn-in procedure

CHEN, CHINGFER and KARLIN, SAMUEL Poisson approximations for conditional r-scan lengths of multiple renewal processes and application to marker arrays in biomolecular sequences

CHOI, BONG DAE and KIM, BARA Sharp result on convergence rate for the distribution of GI/M/1/K queue as K tends to infinity

DEELSTRA, GRISELDA, GRASSELLI, MARTINO and KOEHL, PIERRE-FRANÇOIS Optimal investment strategies in a CIR framework

DONNELLY, PETER and RODRIGUES, ELIANE R. Convergence to stationarity in the Moran model

ECONOMOU, ANTONIS A stochastic lower bound for assemble-transfer batch service queueing networks

GERARDI, A., SPIZZICHINO, F. and TORTI, B. Filtering equations for the conditional law of residual lifetimes from a heterogeneous population

GLICKMAN, HAGIT A best choice problem with multiple selectors

GNEITING, TILMANN Power-law correlations, related models for long-range dependence, and their simulation

HEATH, DAVID and SCHWEIZER, MARTIN Martingales versus PDEs in finance: an equivalence result with examples

HORDIJK, ARIE, LIU, ZHEN and TOWSLEY, DON Smoothing effect of the superposition of homogeneous sources in tandem networks

HOWARD, C. DOUGLAS Zero-temperature Ising spin dynamics on the homogeneous tree of degree three

KOLASSA, JOHN E. Explicit bounds for geometric convergence of Markov chains

KONSTANTOPOULOS, TAKIS and LAST, GÜNTER On the dynamics and performance of stochastic fluid systems

LAMBERTON, DAMIEN and ROGERS, CHRIS Optimal stopping and embedding

LATOUCHE, GUY and TAYLOR, P. G. Level-phase independence for GI/M/1 type Markov chains

LENIN, R. B., PARTHASARATHY, P. R., SCHEINHARDT, W. R. W. and VAN DOORN, E. A. Families of birth-death processes with similar time-dependent behaviour

LI, ZENG-HU Ornstein-Uhlenbeck type processes and branching processes with immigration

LI, HAIJUN and XU, SUSAN H. On the dependence structure and bounds of correlated parallel queues and their applications to synchronized stochastic systems

LÓPEZ-MIMBELA, J. ALFREDO and WAKOLBINGER, ANTON A probabilistic proof of non-explosion of a non-linear PDE system

MACHADO, F. P. and POPOV, S. YU One-dimensional branching random walk in a Markovian random environment

McCORMICK, W. P. and QI, Y. Asymptotic distribution for the sum and maximum of Gaussian processes

McDONALD, DAVID and THÉBERGE, FRANÇOIS Cell loss probability for M/G/1 and time-slotted queues

NIÑO-MORA, JOSÉ and GLAZEBROOK, KEVIN D. Assessing an intuitive condition for stability under a range of traffic conditions via a generalised Lu-Kumar network

PEDERSON, **JESPER LUND** Discounted optimal stopping problems for the maximum process

PIAU, DIDIER Addendum to 'quasi-renewal estimates' for modeling DNA replica-

STEFANOV, VALERI T. On some waiting time problems

TRUFFET, LAURENT Reduction techniques for discrete-time Markov chains on totally ordered state space using stochastic comparisons

VOIT, MICHAEL A note on the rate of convergence to equilibrium for Erlang's model in the subcritical case

WU, WEI BIAO and WOODROOFE, MICHAEL A central limit theorem for iterated random functions

ZACHARY, STAN Dynamics of large uncontrolled loss networks