# CONTENTS

#### Volume 44 Number 1

# Research Papers

- STEVE ALPERN. Rendezvous search with revealed information: applications to the line
- 16 STEFAN WEBER. Distribution-invariant risk measures, entropy, and large deviations
- 41 PETER NEAL. Coupling of two SIR epidemic models with variable susceptibilities and infectivities
- 58 RUSTAM IBRAGIMOV. Thou shalt not diversify: why 'two of every sort'?
- 71 KIYOSHI INOUE AND SIGEO AKI. On generating functions of waiting times and numbers of occurrences of compound patterns in a sequence of multistate trials
- 82 JORGE NAVARRO AND SERKAN ERYILMAZ. Mean residual lifetimes of consecutive-k-out-of-n systems
- 99 F. BALLANI, D. STOYAN AND S. WOLF. On two damage accumulation models and their size effects
- 115 PAUL DUPUIS, CARL NUZMAN AND PHIL WHITING. Large deviations principle for occupancy problems with colored balls
- 142 FRANCO PELLEREY. Comparison results for branching processes in random environments
- 151 JI HWAN CHA AND JIE MI. Study of a stochastic failure model in a random environment
- 164 RAPHAËL ROSSIGNOL. Arbitrary threshold widths for monotone, symmetric properties
- 181 STÉPHANE VILLENEUVE. On threshold strategies and the smooth-fit principle for optimal stopping problems
- 199 ILIE GRIGORESCU, ROBERT CHEN AND LARRY SHEPP. Optimal strategy for the Vardi casino with interest payments
- 212 YI-CHING YAO. On optimality of bold play for discounted Dubins-Savage gambling problems with limited playing times
- 226 BO WU AND YU-HUI ZHANG. A class of multidimensional Q-processes
- 238 STAN ZACHARY. A note on insensitivity in stochastic networks
- 249 VYACHESLAV M. ABRAMOV. Optimal control of a large dam
- 259 AGUSTÍN BOMPADRE, MOSHE DROR AND JAMES B. ORLIN. Probabilistic analysis of unit-demand vehicle routeing problems

# Short Communications

279 ANYUE CHEN, PHIL POLLETT, JUNPING LI AND HANJUN ZHANG. A remark on the uniqueness of weighted Markov branching processes

## Research Papers

- 285 QIHE TANG. Heavy tails of discounted aggregate claims in the continuous-time renewal model
- 295 ANTHONY G. PAKES. Convolution equivalence and infinite divisibility: corrections and corollaries
- 306 MARC LELARGE. Tail asymptotics for monotone-separable networks
- 321 HENG-QING YE. A paradox for admission control of multiclass queueing network with differentiated service
- FABRICE M. GUILLEMIN, RAVI R. MAZUMDAR, CATHERINE P. ROSENBERG AND YU YING. A stochastic ordering property for leaky bucket regulated flows in packet networks
- 349 ZBIGNIEW PALMOWSKI AND BERT ZWART. Tail asymptotics of the supremum of a regenerative process
- 366 STEVEN P. CLARK AND PETER C. KIESSLER. A diffusion approximation for Markov renewal processes
- 379 REMIGIJUS LEIPUS AND DONATAS SURGAILIS. On long-range dependence in regenerative processes based on a general ON/OFF scheme
- 393 ALLAN SLY. Integrated fractional white noise as an alternative to multifractional Brownian motion
- 409 ROMAN V. IVANOV. On the pricing of American options in exponential Lévy markets
- 420 JEAN-FRANÇOIS RENAUD AND XIAOWEN ZHOU. Distribution of the present value of dividend payments in a Lévy risk model
- 428 A. E. KYPRIANOU AND Z. PALMOWSKI. Distributional study of De Finetti's dividend problem for a general Lévy insurance risk process
- 444 M. ELSHAMY. A stability property of stochastic vibration
- 458 GARETH O. ROBERTS AND JEFFREY S. ROSENTHAL. Coupling and ergodicity of adaptive Markov chain Monte Carlo algorithms
- 476 DAVID SIRL, HANJUN ZHANG AND PHIL POLLETT. Computable bounds for the decay parameter of a birth-death process
- 492 M. MOLINA, M. MOTA AND A. RAMOS. Some contributions to the theory of near-critical bisexual branching processes
- 506 MAXIM FINKELSTEIN. On some ageing properties of general repair processes
- 514 JOHN L. SPOUGE. Markov additive processes and repeats in sequences
- 528 MOHAMED BEN ALAYA AND BENJAMIN JOURDAIN. Probabilistic approximation of a nonlinear parabolic equation occurring in rheology

## **Short Communications**

- 547 LAURA PONTIGGIA. Nonconstant sum red-and-black games with bet-dependent win probability function
- 554 ROGER FILLIGER AND MAX-OLIVIER HONGLER. Explicit Gittins indices for a class of superdiffusive processes
- 560 ALEXANDER V. GNEDIN AND DENIS I. MIRETSKIY. Winning rate in the full-information best-choice problem
- 566 PHIL POLLETT, HANJUN ZHANG AND BENJAMIN J. CAIRNS. A note on extinction times for the general birth, death and catastrophe process

## Research Papers

- 571 FRANK BALL, PHILIP D. O'NEILL AND JAMES PIKE. Stochastic epidemic models in structured populations featuring dynamic vaccination and isolation
- 586 GEROLD ALSMEYER AND MATTHIAS MEINERS. A stochastic maximin fixed-point equation related to game tree evaluation
- 607 KA CHUN CHEUNG. Characterizations of conditional comonotonicity
- 618 TEUNIS J. OTT AND JASON SWANSON. Asymptotic behavior of a generalized TCP congestion avoidance algorithm
- 636 JENNIE HANSEN, CIAN REYNOLDS AND STAN ZACHARY. Stability of processor sharing networks with simultaneous resource requirements
- 652 R. ABRAHAM, J. S. DHERSIN AND B. YCART. Strong convergence for urn models with reducible replacement policy
- 661 ALESSANDRO BALDI ANTOGNINI AND SIMONE GIANNERINI. Generalized Pólya urn designs with null balance
- 670 PH. BARBE, W. P. McCORMICK AND C. ZHANG. Asymptotic expansions for distributions of compound sums of random variables with rapidly varying subexponential distribution
- 685 XIAOXIA HE AND YIJUN HU. Ruin probability for the integrated Gaussian process with force of interest
- 695 SUSAN M. PITTS AND KONSTADINOS POLITIS. The joint density of the surplus before and after ruin in the Sparre Andersen model
- 713 PAVEL V. GAPEEV. Discounted optimal stopping for maxima of some jump-diffusion processes
- 732 BRICE FRANKE. A Lévy process whose jumps are dragged by a spherical dynamical system
- 742 YAOZHONG HU AND BERNT ØKSENDAL. Optimal smooth portfolio selection for an insider
- 753 S. V. NAGAEV AND V. WACHTEL. The critical Galton–Watson process without further power moments
- 770 N. LANCHIER AND C. NEUHAUSER. Voter model and biased voter model in heterogeneous environments
- 788 M. R. KANTOROVITZ, H. S. BOOTH, C. J. BURDEN AND S. R. WILSON. Asymptotic behavior of *k*-word matches between two uniformly distributed sequences
- 806 NICOLAS PRIVAULT AND XIAO WEI. Integration by parts for point processes and Monte Carlo estimation

#### Short Communications

- 824 LARS HOLST. Counts of failure strings in certain Bernoulli sequences
- 831 YI-CHING YAO. Explicit Optimal strategy for the Vardi casino with limited playing time
- 838 ALEXANDER D. KOLESNIK. A note on planar random motion at finite speed

- Research Papers
- 843 STEVEN A. LIPPMAN, SHELDON M. ROSS AND SRIDHAR SESHADRI. A weakest link marked stopping problem
- 852 JOSEP FREIXAS. Bounds for Owen's multilinear extension
- 865 ALEXANDER SCHIED AND MITJA STADJE. Robustness of delta hedging for path-dependent options in local volatility models
- 880 FRANK OERTEL AND MARK OWEN. On utility-based superreplication prices of contingent claims with unbounded payoffs
- 889 SHIJIE WANG AND WENSHENG WANG. Precise large deviations for sums of random variables with consistently varying tails in multi-risk models
- 901 VINCENT BANSAYE. On a model for the storage of files on a hardware. II. Evolution of a typical data block
- 928 FÉLIX BELZUNCE, HELENA MARTÍNEZ-PUERTAS AND JOSÉ M. RUIZ. Reversed preservation properties for series and parallel systems
- 938 SHUI FENG AND FENG-YU WANG. A class of infinite-dimensional diffusion processes with connection to population genetics
- 950 RICHARD FINLAY AND EUGENE SENETA. A gamma activity time process with noninteger parameter and self-similar limit
- 960 STEPHAN HAUG AND CLAUDIA CZADO. An exponential continuous-time GARCH process
- 977 PETER J. BROCKWELL, RICHARD A. DAVIS AND YU YANG. Estimation for nonnegative Lévy-driven Ornstein-Uhlenbeck processes
- 990 G. S. TSITSIASHVILI. Moments of random allocation processes reaching a boundary
- 996 ALEXANDER V. GNEDIN. Optimal stopping with rank-dependent loss
- 1012 XIAOWEN ZHOU. Exit problems for spectrally negative Lévy processes reflected at either the supremum or the infimum
- 1031 DENIS DENISOV AND BERT ZWART. On a theorem of Breiman and a class of random difference equations
- 1047 K. J. E. CARPIO AND D. J. DALEY. Long-range dependence of Markov chains in discrete time on countable state space
- 1056 ANDREAS LINDELL AND LARS HOLST. Distributions of the longest excursions in a tied down simple random walk and in a Brownian bridge
- 1068 ANTONIO PIEVATOLO. The downtime distribution after a failure of a system with multistate independent components
- 1078 URTZI AYESTA. A unifying conservation law for single-server queues
- 1088 YINGDONG LU AND ANA RADOVANOVIĆ. Asymptotic blocking probabilities in loss networks with subexponential demands

## Short Communications

- 1103 THOMAS PRINCE AND NEVILLE WEBER. Fixation in conditional branching process models in population genetics
- 1111 JERIM KIM, BARA KIM AND SUNG-SEOK KO. Tail asymptotics for the queue size distribution in an M/G/1 retrial queue
- 1119 KLAS MARKSTRÖM. Negative association does not imply log-concavity of the rank sequence
- 1122 Correction
- 1123 Index

## Subscription rates

Subscription rates for volume 44 (2007) of *Journal of Applied Probability (JAP)* are as follows (post free and including online access at http://projecteuclid.org/jap/): US\$330.00; A\$435.00; £180.00 for libraries and institutions; or US\$110.00; A\$145.00; £60.00 for individuals belonging to a recognised scientific society. The subscription rates for volume 39 (2007) of *Advances in Applied Probability*, the companion publication, are the same; if both journals are ordered directly from the Applied Probability office at the same time, the combined price is discounted by 10%. Please send all enquiries to: Applied Probability Subscriptions, School of Mathematics and Statistics, University of Sheffield, Sheffield S3 7RH, UK (telephone +44 114 222 3922; fax +44 114 272 9782; email s.c.boyles@sheffield.ac.uk). Cheques, money orders, etc. should be made payable to 'Applied Probability'. Payment is acceptable in US, Australian or UK currency, or by Visa or Mastercard. We can provide back issue prices on application.

## **Notes for contributors**

Papers published in Journal of Applied Probability (JAP) may be either: (i) research papers not exceeding 20 printed pages; or (ii) short communications of a few printed pages in the nature of notes or brief accounts of work in progress. Letters relating specifically to papers that have appeared in JAP will also be published there. Review papers, longer research papers, letters to the Editor and papers in stochastic geometry and statistical applications are published in Advances in Applied Probability, the companion publication.

It is the policy not to accept for publication papers that cannot appear in print within 15 months of the date of receipt of the final version. In order to meet this deadline, an accepted paper may be published in either journal, according to the space available.

Fifty offprints of each paper will be provided free, with additional offprints available at cost.

Papers submitted to the Applied Probability journals are considered on the understanding that they have not been published previously and are not under consideration by another publication. Accepted papers will not be published elsewhere without the written permission of the Trust. Papers should be written in English or French; papers in other languages may be accepted, but will appear (subject to the author's agreement) in English or French translation.

Papers should include: (i) a **short abstract** of 4–10 lines giving a non-mathematical description of the subject matter and results; (ii) a list of **keywords** detailing the contents; and (iii) a list of **classifications**, using the 2000 Mathematics Subject Classification scheme (http://www.ams.org/msc/). Letters to the Editor need not include these. To assist authors in writing papers in the Applied Probability style, they may use the Lagrange class file aptpub.cls, available from http://www.appliedprobability.org/. Use of this class file is not a condition of submission, but will considerably increase the speed at which papers are processed.

Papers should be submitted as hard copy or as electronic files (with hard copy back-up). All submissions will be acknowledged on receipt and must be accompanied by a covering letter stating the author's postal address and affiliation. Hard copy: Send all submissions to the Applied Probability office in Sheffield, and not to individual editors. Two copies of the paper, at least one of which should be double spaced, should be sent to: Executive Editor, Applied Probability, School of Mathematics and Statistics, University of Sheffield, Sheffield S3 7RH, UK. Electronic submission: Please email a double-spaced PostScript<sup>TM</sup> (.ps) or portable document format (.pdf) file, not exceeding 1 Mb. The files must be clearly identified by name in a separate covering message. The address for email submissions is l.nash@sheffield.ac.uk. Authors should also submit one hard copy to the Executive Editor, as above.

# Copyright

The copyright of all published papers is vested in the Applied Probability Trust. When a paper is accepted for publication, the Trust asks the authors to assign copyright by signing a form in which the terms of copyright are listed. Failure to do this promptly may delay or prevent publication.

Authorisation to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by the Applied Probability Trust for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the corresponding processing and royalty fees (see http://www.copyright.com) are paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923, USA. 0021–9002/07

- Research Papers
- 843 STEVEN A. LIPPMAN, SHELDON M. ROSS AND SRIDHAR SESHADRI. A weakest link marked stopping problem
- 852 JOSEP FREIXAS. Bounds for Owen's multilinear extension
- 865 ALEXANDER SCHIEDAND MITJA STADJE. Robustness of delta hedging for path-dependent options in local volatility models
- 880 FRANK OERTEL AND MARK OWEN. On utility-based superreplication prices of contingent claims with unbounded payoffs
- 889 SHIJIE WANG AND WENSHENG WANG. Precise large deviations for sums of random variables with consistently varying tails in multi-risk models
- 901 VINCENT BANSAYE. On a model for the storage of files on a hardware. II. Evolution of a typical data block
- 928 FÉLIX BELZUNCE, HELENA MARTÍNEZ-PUERTAS AND JOSÉ M. RUIZ. Reversed preservation properties for series and parallel systems
- 938 SHUI FENG AND FENG-YU WANG. A class of infinite-dimensional diffusion processes with connection to population genetics
- 950 RICHARD FINLAY AND EUGENE SENETA. A gamma activity time process with noninteger parameter and self-similar limit
- 960 STEPHAN HAUG AND CLAUDIA CZADO. An exponential continuous-time GARCH process
- 977 PETER J. BROCKWELL, RICHARD A. DAVIS AND YU YANG. Estimation for nonnegative Lévy-driven Ornstein-Uhlenbeck processes
- 990 G. S. TSITSIASHVILI. Moments of random allocation processes reaching a boundary
- 996 ALEXANDER V. GNEDIN. Optimal stopping with rank-dependent loss
- 1012 XIAOWEN ZHOU. Exit problems for spectrally negative Lévy processes reflected at either the supremum or the infimum
- 1031 DENIS DENISOV AND BERT ZWART. On a theorem of Breiman and a class of random difference equations
- 1047 K. J. E. CARPIO AND D. J. DALEY. Long-range dependence of Markov chains in discrete time on countable state space
- 1056 ANDREAS LINDELL AND LARS HOLST. Distributions of the longest excursions in a tied down simple random walk and in a Brownian bridge
- 1068 ANTONIO PIEVATOLO. The downtime distribution after a failure of a system with multistate independent components
- 1078 URTZI AYESTA. A unifying conservation law for single-server queues
- 1088 YINGDONG LU AND ANA RADOVANOVIĆ. Asymptotic blocking probabilities in loss networks with subexponential demands

# **Short Communications**

- 1103 THOMAS PRINCE AND NEVILLE WEBER. Fixation in conditional branching process models in population genetics
- 1111 JERIM KIM, BARA KIM AND SUNG-SEOK KO. Tail asymptotics for the queue size distribution in an M/G/1 retrial queue
- 1119 KLAS MARKSTRÖM. Negative association does not imply log-concavity of the rank sequence
- 1122 Correction
- 1123 Index

Published by the **Applied Probability Trust**Copyright © 2007 by the **Applied Probability Trust** 

ISSN 0021-9002