

ADVANCES IN APPLIED PROBABILITY

INCLUDING A SECTION ON

STOCHASTIC GEOMETRY AND
STATISTICAL APPLICATIONS

VOLUME 47

NUMBER 4

DECEMBER 2015



EDITOR-IN-CHIEF (2005–) **S. ASMUSSEN**

FOUNDING EDITOR (1964–1989) **J. GANI**

PAST EDITOR-IN-CHIEF (1990–2007) **C. C. HEYDE**

ADVANCES IN APPLIED PROBABILITY

This is an international journal published by the Applied Probability Trust and a companion publication to *Journal of Applied Probability*. It contains mathematical and scientific papers of interest to probabilists, with emphasis on applications in a broad spectrum of disciplines. An annual volume of approximately 1200 pages is published in four issues appearing in March, June, September and December.

EDITORIAL BOARD

Editor-in-Chief

S. ASMUSSEN (Aarhus University)

Coordinating Editors

O. J. BOXMA (Eindhoven University of Technology)

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

I. MOLCHANOV (University of Bern)

R. VAN DER HOFSTAD (Eindhoven University of Technology)

Editors

H. ALBRECHER (University of Lausanne)

T. AVEN (University of Stavanger)

N. BÄUERLE (Universität Karlsruhe)

J. D. BIGGINS (University of Sheffield)

J. BLANCHET (Columbia University)

F. T. BRUSS (Université Libre de Bruxelles)

P. CALKA SGSA (University of Rouen)

S. N. CHIU SGSA (Hong Kong Baptist University)

P. A. FERRARI (University of São Paulo)

S. FOSS (Heriot-Watt University and Sobolev Institute of Mathematics)

P. W. GLYNN (Stanford University)

A. V. GNEDIN (Queen Mary, University of London)

X. P. GUO (Sun Yat-sen University)

O. HÄGGSTRÖM (Chalmers University of Technology)

W. S. KENDALL SGSA (University of Warwick)

F. C. KLEBANER (Monash University)

S. G. KOU (National University of Singapore)

A. E. KYPRIANOU (University of Bath)

G. LAST SGSA (Universität Karlsruhe)

H. M. MAHMOUD (The George Washington University)

M. R. H. MANDJES (University of Amsterdam)

T. MIKOSCH (University of Copenhagen)

M. MÖHLE (Eberhard Karls University of Tübingen)

J. MØLLER SGSA (Aalborg University)

A. MÜLLER (University of Siegen)

Z. PALMOWSKI (University of Wrocław)

M. D. PENROSE SGSA (University of Bath)

G. REINERT (University of Oxford)

M. REITZNER SGSA (University of Osnabrück)

L. C. G. ROGERS (University of Cambridge)

L. RÜSCHENDORF (University of Freiburg)

F. J. SAMANIEGO (University of California, Davis)

G. SAMORODNITSKY (Cornell University)

M. SCARSINI (LUISS)

M. SCHWEIZER (ETH, Zürich)

J. SEGERS (Université Catholique de Louvain)

A. L. STOLYAR (Lehigh University)

D. STOYAN SGSA (Bergakademie Freiberg)

P. G. TAYLOR (University of Melbourne)

EDITORIAL OFFICE

Executive Editor

E. TALIB (University of Sheffield)

Production Editor

J. CHAPPELL (University of Sheffield)

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

CONTENTS

Volume 47

Number 1

Stochastic Geometry and Statistical Applications

- 1 VENKAT ANANTHARAM AND FRANÇOIS BACCELLI. Capacity and error exponents of stationary point processes under random additive displacements
- 27 STEFAN STEINERBERGER. New bounds for the traveling salesman constant

General Applied Probability

- 37 LOUIGI ADDARIO-BERRY AND TAO LEI. The mixing time of the Newman–Watts small-world model
- 57 MICHAEL GRINFELD, STANISLAV VOLKOV AND ANDREW R. WADE. Convergence in a multidimensional randomized Keynesian beauty contest
- 83 HIROYUKI MASUYAMA. Error bounds for augmented truncations of discrete-time block-monotone Markov chains under geometric drift conditions
- 106 FRANÇOIS DUFOUR AND ALEXEI B. PIUNOVSKIY. Impulsive control for continuous-time Markov decision processes
- 128 KAMILLE SOFIE TÅGHOLT GAD AND JESPER LUND PEDERSEN. Variance optimal stopping for geometric Lévy processes
- 146 HIRONOBU SAKAGAWA. Persistence probability for a class of Gaussian processes related to random interface models
- 164 GHURUMURUHAN GANESAN. Infection spread in random geometric graphs
- 182 DANIEL AHLBERG. Asymptotics of first-passage percolation on one-dimensional graphs
- 210 HONGZHONG ZHANG. Occupation times, drawdowns, and drawups for one-dimensional regular diffusions
- 231 DARYL J. DALEY, JOHAN S.H. VAN LEEUWAARDEN AND YONI NAZARATHY. BRAVO for many-server QED systems with finite buffers
- 251 A. L. STOLYAR. Diffusion scale tightness of invariant distributions of a large-scale flexible service system
- 270 XIAOHU LI AND YINPING YOU. Permutation monotone functions of random vectors with applications in financial and actuarial risk management
- 292 RICHARD ARRATIA AND STEPHEN DESALVO. On the random sampling of pairs, with pedestrian examples

Stochastic Geometry and Statistical Applications

- 307 LINDA V. HANSEN, THORDIS L. THORARINSDOTTIR, EVGENI OVCHAROV, TILMANN GNEITING AND DONALD RICHARDS. Gaussian random particles with flexible Hausdorff dimension
- 328 C. HIRSCH, D. NEUHÄUSER, C. GLOAGUEN AND V. SCHMIDT. First passage percolation on random geometric graphs and an application to shortest-path trees

General Applied Probability

- 355 QIAN LIN. Nash equilibrium payoffs for stochastic differential games with two reflecting barriers
- 378 B. ERIKSSON AND M. R. PISTORIUS. American option valuation under continuous-time Markov chains
- 402 PAWEŁ LOREK AND RYSZARD SZEKLI. Computable bounds on the spectral gap for unreliable Jackson networks
- 425 PREDRAG R. JELENKOVIĆ AND EVANGELIA D. SKIANI. Distribution of the number of retransmissions of bounded documents
- 450 A. J. E. M. JANSSEN AND J. S. H. VAN LEEUWAARDEN. Staffing many-server systems with admission control and retries
- 476 AMARJIT BUDHIRAJA, VLADAS PIPIRAS AND XIAOMING SONG. Admission control for multidimensional workload input with heavy tails and fractional Ornstein–Uhlenbeck process
- 506 JI HWAN CHA AND GIANPAOLO PULCINI. Burn-in procedure based on a dependent covariate process
- 530 SERIK SAGITOV AND MARIA CONCEIÇÃO SERRA. Skeletons of near-critical Bienaymé–Galton–Watson branching processes
- 545 SANA LOUHICHI AND BERNARD YCART. Exponential growth of bifurcating processes with ancestral dependence
- 565 JONATHAN JORDAN AND ANDREW R. WADE. Phase transitions for random geometric preferential attachment graphs
- 589 ISTVÁN KOLOSSVÁRY AND JÚLIA KOMJÁTHY. First passage percolation on inhomogeneous random graphs

Stochastic Geometry and Statistical Applications

- 611 BRUNO GALERNE AND RAPHAEL LACHÎÈZE-REY. Random measurable sets and covariogram realizability problems
- 640 WERNER NAGEL AND EIKE BIEHLER. Consistency of constructions for cell division processes

General Applied Probability

- 652 D. J. HODGE AND K. D. GLAZEBROOK. On the asymptotic optimality of greedy index heuristics for multi-action restless bandits
- 668 N. LANCHIER AND N. TAYLOR. Galam's bottom-up hierarchical system and public debate model revisited
- 693 JEAN-STÉPHANE DHERSIN AND LINGLONG YUAN. On the total length of external branches for beta-coalescents
- 715 FLORIAN SIMATOS. State space collapse for critical multistage epidemics
- 741 XINXIN CHEN. A necessary and sufficient condition for the nontrivial limit of the derivative martingale in a branching random walk
- 761 JOSE BLANCHET AND JING DONG. Perfect sampling for infinite server and loss systems
- 787 XIAOOU LI AND JINGCHEN LIU. Rare-event simulation and efficient discretization for the supremum of Gaussian random fields
- 817 HUEI-WEN TENG, MING-HSUAN KANG AND CHENG-DER FUH. On spherical Monte Carlo simulations for multivariate normal probabilities
- 837 ANTOINE JACQUIER AND MATTHEW LORIG. From characteristic functions to implied volatility expansions
- 858 NICHOLAS R. PETERSON AND BORIS PITTEL. Distance between two random k -out digraphs, with and without preferential attachment
- 880 BERNARD BERCU AND ADRIEN RICHOU. Large deviations for the Ornstein–Uhlenbeck process with shift
- 902 HUIJIE QIAO AND JINQIAO DUAN. Nonlinear filtering of stochastic dynamical systems with Lévy noises

Stochastic Geometry and Statistical Applications

- 919 NICOLAS PRIVAULT. Laplace transform identities for the volume of stopping sets based on Poisson point processes
- 934 AIHUA XIA AND J. E. YUKICH. Normal approximation for statistics of Gibbsian input in geometric probability

General Applied Probability

- 973 EMILIE COUPECHOUX AND MARC LELARGE. Contagions in random networks with overlapping communities
- 989 P. VIS, R. BEKKER AND R. D. VAN DER MEI. Heavy-traffic limits for polling models with exhaustive service and non-FCFS service order policies
- 1015 A. B. DIEKER AND T. SUK. Randomized longest-queue-first scheduling for large-scale buffered systems
- 1039 STEPHEN B. CONNOR AND WILFRID S. KENDALL. Perfect simulation of $M/G/c$ queues
- 1064 XIANPING GUO, XIANGXIANG HUANG AND YONGHUI HUANG. Finite-horizon optimality for continuous-time Markov decision processes with unbounded transition rates
- 1088 H. BLOK AND F. M. SPIEKSMAN. Countable state Markov decision processes with unbounded jump rates and discounted cost: optimality equation and approximations
- 1108 CLAUDIA KLÜPPELBERG AND MUNEYA MATSUI. Generalized fractional Lévy processes with fractional Brownian motion limit
- 1132 GRIGORI N. MILSTEIN AND JOHN SCHOENMAKERS. Uniform approximation of the Cox–Ingersoll–Ross process
- 1157 JAFAR AHMADI, ANTONIO DI CRESCENZO AND MARIA LONGOBARDI. On dynamic mutual information for bivariate lifetimes
- 1175 RAÚL GOUET, F. JAVIER LÓPEZ AND GERARDO SANZ. Records from stationary observations subject to a random trend
- 1190 A. D. BARBOUR, K. HAMZA, HAYA KASPI AND F. C. KLEBANER. Escape from the boundary in Markov population processes
- 1212 ERIK J. BAURDOUX, NAN CHEN, BUDHI A. SURYA AND KAZUTOSHI YAMAZAKI. Optimal double stopping of a Brownian bridge
- 1235 Index (General Applied Probability)
- 1238 Index (Stochastic Geometry and Statistical Applications)