ADVANCES IN APPLIED PROBABILITY

INCLUDING A SECTION ON

STOCHASTIC GEOMETRY AND STATISTICAL APPLICATIONS

VOLUME 46

NUMBER 4 DECEMBER 2014



EDITOR-IN-CHIEF (2005-) S. ASMUSSEN FOUNDING EDITOR (1964–1989) J. GANI

ADVANCES IN APPLIED PROBABILITY

This is a companion publication to the *Journal of Applied Probability* published by the Applied Probability Trust. It contains reviews and expository papers in applied probability, as well as mathematical and scientific papers of interest to probabilists, letters to the editor and a section devoted to stochastic geometry and statistical applications (SGSA). An annual volume of up to 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 SGSA (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)

EDITORIAL OFFICE

Executive Editor

E. TALIB (University of Sheffield)

Production Editor

J. CHAPPELL (University of Sheffield)

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)

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.

https://doi.org/10.1017/S000186780000762X.Published online by Cambridge University Press

CONTENTS

Volume 46 Number 1

Stochastic Geometry and Statistical Applications

- 1 BARTŁOMIEJ BŁASZCZYSZYN AND D. YOGESHWARAN. On comparison of clustering properties of point processes
- 21 KASPAR STUCKI AND DOMINIC SCHUHMACHER. Bounds for the probability generating functional of a Gibbs point process
- 35 ANNE MARIE SVANE. Local digital estimators of intrinsic volumes for Boolean models and in the design-based setting

- 59 MATTHIEU JONCKHEERE AND SEVA SHNEER. Stability of multi-dimensional birth-and-death processes with state-dependent 0-homogeneous jumps
- 76 MARIA REMEROVA, SERGEY FOSS AND BERT ZWART. Random fluid limit of an overloaded polling model
- 102 JUKKA LEMPA. Bounded variation control of Itô diffusions with exogenously restricted intervention times
- 121 ULRICH RIEDER AND MARC WITTLINGER. On optimal terminal wealth problems with random trading times and drawdown constraints
- 139 MASAHIKO EGAMI AND KAZUTOSHI YAMAZAKI. On the continuous and smooth fit principle for optimal stopping problems in spectrally negative Lévy models
- 168 TOSHIO NAKATA. The number of collisions for the occupancy problem with unequal probabilities
- 186 LAURA SACERDOTE, OTTAVIA TELVE AND CRISTINA ZUCCA. Joint densities of first hitting times of a diffusion process through two time-dependent boundaries
- 203 RAVI KALPATHY AND HOSAM MAHMOUD. Perpetuities in fair leader election algorithms
- 217 YAN-XIA REN AND TING YANG. Multitype branching Brownian motion and traveling waves
- 241 PETER NEAL. Endemic behaviour of SIS epidemics with general infectious period distributions
- DANIELA BERTACCHI, FÁBIO PRATES MACHADO AND FABIO ZUCCA. Local and global survival for nonhomogeneous random walk systems on Z
- 279 ALEXANDROS BESKOS, DAN O. CRISAN, AJAY JASRA AND NICK WHITELEY. Error bounds and normalizing constants for sequential Monte Carlo samplers in high dimensions

Volume 46 Number 2

Stochastic Geometry and Statistical Applications

- 307 GE CHEN, CHANGLONG YAO AND TIANDE GUO. The asymptotic size of the largest component in random geometric graphs with some applications
- 325 L. DECREUSEFOND, E. FERRAZ, H. RANDRIAMBOLOLONA AND A. VERGNE. Simplicial homology of random configurations
- 348 GÜNTER LAST, MATHEW D. PENROSE, MATTHIAS SCHULTE AND CHRISTOPH THÄLE. Moments and central limit theorems for some multivariate Poisson functionals

- 365 MASAHIRO KOBAYASHI AND MASAKIYO MIYAZAWA. Tail asymptotics of the stationary distribution of a two-dimensional reflecting random walk with unbounded upward jumps
- 400 DANIELA BERTACCHI AND FABIO ZUCCA. Strong local survival of branching random walks is not monotone
- 422 GALIN L. JONES, GARETH O. ROBERTS AND JEFFREY S. ROSENTHAL. Convergence of conditional Metropolis—Hastings samplers
- 446 CAMILLE CORON. Stochastic modeling of density-dependent diploid populations and the extinction vortex
- 478 SEBASTIAN ENGELKE, ALEXANDER MALINOWSKI, MARCO OESTING AND MARTIN SCHLATHER. Statistical inference for max-stable processes by conditioning on extreme events
- 496 ALEXANDER GNEDIN, ALEXANDER IKSANOV, ALEXANDER MARYNYCH AND MARTIN MÖHLE. On asymptotics of the beta coalescents
- 516 MATHIEU FEUILLET AND PHILIPPE ROBERT. A scaling analysis of a transient stochastic network
- 536 ALESSANDRO ARLOTTO AND J. MICHAEL STEELE. Optimal online selection of an alternating subsequence: a central limit theorem
- 560 ERIC FOXALL. Convergence and monotonicity for a model of spontaneous infection and transmission
- 585 LI-XIN ZHANG, FEIFANG HU, SIU HUNG CHEUNG AND WAI SUM CHAN. Asymptotic properties of multicolor randomly reinforced Pólya urns

Volume 46 Number 3

Stochastic Geometry and Statistical Applications

- 603 D. COUPIER AND YU. DAVYDOV. Random symmetrizations of convex bodies
- 522 JULIA HÖRRMANN AND DANIEL HUG. On the volume of the zero cell of a class of isotropic Poisson hyperplane tessellations
- 643 SERVET MARTÍNEZ AND WERNER NAGEL. STIT tessellations have trivial tail σ -algebra

- OLIVIER GARET AND RÉGINE MARCHAND. Growth of a population of bacteria in a dynamical hostile environment
- 687 ELISABETH BAUERNSCHUBERT. Recurrence and transience of critical branching processes in random environment with immigration and an application to excited random walks
- 704 RUI CHEN AND OLLIVIER HYRIEN. On classes of equivalence and identifiability of age-dependent branching processes
- 719 OLE E. BARNDORFF-NIELSEN, FRED ESPEN BENTH AND ALMUT E. D. VERAART. Modelling electricity futures by ambit fields
- 746 ERIK EKSTRÖM AND BING LU. The optimal dividend problem in the dual model
- 766 NING CAI, S. G. KOU AND ZONGJIAN LIU. A two-sided Laplace inversion algorithm with computable error bounds and its applications in financial engineering
- 790 DOMINIC EDELMANN AND CORNELIA WICHELHAUS. Nonparametric inference for queueing networks of $Geom^X/G/\infty$ queues in discrete time
- 812 E. S. BADILA, O. J. BOXMA, J. A. C. RESING AND E. M. M. WINANDS. Queues and risk models with simultaneous arrivals
- 832 NAOTO MIYOSHI AND TOMOYUKI SHIRAI. A cellular network model with Ginibre configured base stations
- 846 VICKY FASEN. Limit theory for high frequency sampled MCARMA models
- 878 MÁTYÁS BARCZY, LEIF DÖRING, ZENGHU LI AND GYULA PAP. Stationarity and ergodicity for an affine two-factor model

Volume 46 Number 4

Stochastic Geometry and Statistical Applications

- 899 F. FODOR, P. KEVEI AND V. VíGH. On random disc polygons in smooth convex discs
- 919 DANIEL HUG AND ROLF SCHNEIDER. Approximation properties of random polytopes associated with Poisson hyperplane processes
- 937 DANIEL HUG, GÜNTER LAST, ZBYNĚK PAWLAS AND WOLFGANG WEIL. Statistics for Poisson models of overlapping spheres

- 963 ZHIYI CHI. Nonnormal small jump approximation of infinitely divisible distributions
- 985 EMILIE COUPECHOUX AND MARC LELARGE. How clustering affects epidemics in random networks
- 1009 ROBERT C. GRIFFITHS. The Λ -Fleming-Viot process and a connection with Wright-Fisher diffusion
- 1036 LOÏC HERVÉ AND JAMES LEDOUX. Spectral analysis of Markov kernels and application to the convergence rate of discrete random walks
- 1059 QIFAN SONG, MINGQI WU AND FAMING LIANG. Weak convergence rates of population versus single-chain stochastic approximation MCMC algorithms
- 1084 IEVA GRUBLYTĖ AND DONATAS SURGAILIS. Projective stochastic equations and nonlinear long memory
- 1106 MAłGORZATA KUCHTA AND MICHAł MORAYNE. Monotone case for an extended process
- 1126 ALBERTO CHIARINI AND MARKUS FISCHER. On large deviations for small noise Itô processes
- 1148 JI HWAN CHA. Characterization of the generalized Pólya process and its applications
- 1172 ALEXANDER D. KOLESNIK. Probability distribution function for the Euclidean distance between two telegraph processes
- 1194 Index (General Applied Probability)
- 1197 Index (Stochastic Geometry and Statistical Applications)

NEW PUBLICATION

Journal of Applied Probability Special Volume 51A

CELEBRATING 50 YEARS OF THE APPLIED PROBABILITY TRUST

Edited by

S. ASMUSSEN, P. JAGERS, I. MOLCHANOV and L. C. G. ROGERS

(ISBN 978-0-902016-09-5 (2014) xviii+408 pp. hardback)



This special volume appears in celebration of the fiftieth anniversary of both the Trust and *Journal of Applied Probability*. It contains an account of the Trust's history and activities written by Joe Gani and some historical reflections on applied probability by John Kingman. It also includes the 2014 Applied Probability Trust Lectures given by Dan Crisan and Alexander Gnedin at the jubilee event held at The University of Sheffield in April. The body of the volume consists of a number of invited papers by eminent researchers in applied probability and covers topics such as biological applications, finance and econometrics, heavy tails, Markov processes and renewal theory, random graphs, particle systems, and stochastic geometry.

A contents list is available at http://www.appliedprobability.org Hard copy price (including surface mail postage):

£35.00/US\$56.00/A\$64.00

Visit http://www.appliedprobability.org to order online or to download an order form. Orders together with payment should be sent to:

Applied Probability School of Mathematics and Statistics The University of Sheffield Sheffield S3 7RH, UK

For further information, contact Sue Boyles: Tel: +44 114 222 3922; Fax: +44 114 222 3926; Email: s.c.boyles@sheffield.ac.uk

