JOURNAL OF APPLIED PROBABILITY

VOLUME 55 NUMBER 1 MARCH 2018



EDITOR-IN-CHIEF (2016–) **P. W. GLYNN**FOUNDING EDITOR (1964–1989) **J. GANI**PAST EDITORS-IN-CHIEF (1990–2007) **C. C. HEYDE**(2005–2015) **S. ASMUSSEN**

JOURNAL OF APPLIED PROBABILITY

This is an international journal published by the Applied Probability Trust and a companion publication to *Advances in Applied Probability*. It contains mathematical and scientific papers of interest to probabilists, with emphasis on applications in a broad spectrum of disciplines. In addition, short communications and letters specifically relating to papers appearing in either JAP or AAP are published here. An annual volume of approximately 1312 pages is published in four issues appearing in March, June, September and December.

EDITORIAL BOARD

Editor-in-Chief

P. W. GLYNN (Stanford University)

Coordinating Editors

J. BLANCHET (Stanford University)

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)

S. BHAMIDI (University of North Carolina)

J. D. BIGGINS (University of Sheffield)

P. CALKA (University of Rouen)

J. DAI (Cornell University)

M. DEIJFEN (Stockholm University)

A. B. DIEKER (Columbia University)

P. A. FERRARI (University of São Paulo)

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

A. V. GNEDIN (Queen Mary, University of

London)

E. HASHORVA (University of Lausanne)

W. S. KENDALL (University of Warwick)

F. C. KLEBANER (Monash University)

A. E. KYPRIANOU (University of Bath)

A. KUZNETSOV (York University)

G. LAST (Universität Karlsruhe)

J. LIU (Columbia University)

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)

A. MÜLLER (University of Siegen)

J. NAVARRO (University of Murcia)

G. PESKIR (The University of Manchester)

G. REINERT (University of Oxford)

M. REITZNER (University of Osnabrück)

G. ROBERTS (University of Warwick)

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

M. ROSENBAUM (Pierre and Marie Curie University)

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

G. SAMORODNITSKY (Cornell University)

M. SCARSINI (LUISS)

M. SCHWEIZER (ETH, Zürich)

E. SPODAREV (Ulm University)

P. G. TAYLOR (University of Melbourne)

C. THÄLE (Ruhr University Bochum)

R. WILLIAMS (University of California, San Diego)

J. E. YUKICH (Lehigh University)

B. ZWART (CWI)

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.

JOURNAL OF APPLIED PROBABILITY

VOLUME 55

2018



EDITOR-IN-CHIEF (2016–) P. W. GLYNN FOUNDING EDITOR (1964–1989) J. GANI PAST EDITORS-IN-CHIEF (1990–2007) C. C. HEYDE (2005–2015) S. ASMUSSEN

Published by the **Applied Probability Trust**

© 2018 ISSN 0021–9002 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.

0021-9002/18