NOW WITH EXTENDED PAGES!

MATHEMATICAL FINANCE

AN INTERNATIONAL JOURNAL OF MATHEMATICS, STATISTICS & FINANCIAL ECONOMICS

Edited by Stanley R. Pliska
University of Illinois at Chicago

Mathematical aspects of finance theory have, in the past, been scattered throughout publications in finance, economics, mathematics and statistics. ***Mathematical Finance*** remedies this by acting as a primary forum for finance researchers, finance practitioners and mathematical scientists. The journal provides clear and concise articles which present the latest theoretical studies in readable and accessible prose.

Also featuring book and software reviews, ***Mathematical Finance*** offers new research on the financial applications of statistical and econometric methods; numerical analysis and computational methods; and modern developments in Stochastic Processes, Game Theory, and Optimization Theory.

ISSN 0960-1627, Published Quarterly
Subscription information for ***Mathematical Finance*** Volume 7, 1997:
*Individual: .....$95.00 *(N. America)* .....$110.00 *(Rest of World)*
Institutional:.....$224.00 *(N. America)* .....$256.00 *(Rest of World)*
**Individual rate available to teaching academics only; proof of affiliation required.*

Journals Department
Blackwell Publishers
350 Main Street
Malden, MA 02148
E-Mail: subscrip@blackwellpub.com

CALL TOLL-FREE
(800) 835-6770

BLACKWELL Publishers

Visit **BLACKWELL PUBLISHERS ON THE NET** *at:*
http://www.blackwellpublishers.co.uk

Downloaded from https://www.cambridge.org/core. IP address: 207.241.231.81, on 02 May 2019 at 15:45:12, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S0021900200101214

FORTHCOMING PAPERS

AALTO, SAMULI Characterization of the output rate process for a Markovian storage model

ABRAMOV, VYACHESLAV M. On a property of refusals stream

ALEXANDER, KENNETH S. Shortest common superstrings of random strings

ANDERSSON, H. and DJEHICHE, B. Limit theorems for the total size of a spatial epidemic

ANGULO, J.M. and RUIZ-MEDINA, M.D. A series expansion approach to the inverse problem

BARNES, JOHN A. and MEILI, RICHARD A stationary Poisson departure process from a minimally delayed infinite server queue with non-stationary Poisson arrivals

BENDA, MARTIN A central limit theorem for contractive stochastic dynamical systems

BENTARZI, M. and HALLIN, M. Spectral factorization of periodically correlated MA(1) processes

BEREZNER, S.A., KRZESINSKI, A.E. and TAYLOR, P.G. A product-form 'loss network' with a form of queueing

BEREZNER, S.A., KRZESINSKI, A.E. and TAYLOR, P.G. On the inverse of Erlang's function

BERTOIN, J., CHAUMONT, L. and YOR, M. Two chain-transformations and their applications to quantiles

BOLLOBAS, BÉLA and STACEY, ALAN Approximate upper bounds for the critical probability of oriented percolation in two dimensions based on rapidly mixing Markov chains

BOUCHERIE, RICHARD J. and SERENO, MATTEO On the traffic equations for batch routing queueing networks and stochastic Petri nets

BOXMA, O. and YECHIALI, URI An $M/G/1$ queue with multiple types of feedback and gated vacations

BROWN, TIMOTHY C., HAMZA, KAIS and XIA, AIHUA On the variance to mean ratio for random variables from Markov chains and point processes

BRUSS, F. THOMAS and FERGUSON, THOMAS S. Multiple buying or selling with vector offers

CAI, J. and WU, Y. Characterization of life distributions under some generalised stochastic orderings

CALVIN, J.M. and GLYNN, P.W. Average case behavior of random search for the maximum

CALZOLARI, A. and MARCHETTI, F. Limit motion of an Ornstein–Uhlenbeck particle on the equilibrium manifold of a force field

CECI, CLAUDIA and GERARDI, ANNA Filtering of a branching process given its split times

CHAO, C.-C., HWANG, H.-K. and LIANG, W.-Q. Expected measure of the union of random rectangles

CHAO, XIULI Partial balances in batch arrival batch service and assemble-transfer queueing networks

CHAO, XIULI and ZHENG, SHAOHUI A result on networks of queues with customer coalescence and state-dependent signaling

CHEN, R. W., ROSENBERG, B. and SHEPP, L. A. A secretary problem with two decision makers

CHEN, ZHAO-GUO and ANDERSON, OLIVER D. Increment-vector methodology: transforming nonstationary series to stationary series

CHONG, K.S. and LAM, K. Cost comparison of a spectrum of self-organizing rules

CHRISTAKOS, GEORGE and HRISTOPULOS, DIONISSIOS T. Characterization of contaminated sites by means of stochastic indicator parameters

COMTET, A., MONTHUS, C. and YOR, M. Exponential functionals of Brownian motion and disordered systems

DIEKMANN, O., DE JONG, M.C.M. and METZ, J.A.J. A deterministic epidemic model taking account of repeated contacts between the same individuals

DI MATTEO, ILARIA and ORSINGHER, ENZO Detailed probabilistic analysis of the integrated three-valued telegraph signal

Downloaded from https://www.cambridge.org/core. IP address: 207.241.231.81, on 02 May 2019 at 15:45:12, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S0021900200101214

DONEY, R.A. and YOR, M. On a formula of Takàcs for Brownian motion with drift

EBRAHIMI, NADER Multivariate age and block replacement policies

FELDMAN, RAISA E. and IYER, SRIKANTH K. Non-Gaussian density processes arising from non-Poisson systems of independent Brownian motions

FERGUSON, THOMAS S. and MELOLIDAKIS, C. Last round betting

FREY, RÜDIGER and SOMMER, DANIEL The generalization of the Geske-formula for compound options to stochastic interest rates is not trivial: a note

GARREN, STEVEN T. and RICHARDS, DONALD ST P. General conditions for comparing the reliability functions of systems of components sharing a common environment

GASEMYR, JORUND On identifiability in the autopsy model of reliability systems of lifemonitored and conditionally lifemonitored components

GEORGII, HANS-OTTO and KÜNETH, TORSTEN Stochastic comparison of point random fields

GONZALEZ, M. and MOLINA, M. On the L^2-convergence of a superadditive bisexual Galton–Watson branching process

GOSSELIN, FRÉDÉRIC Two classes of subcritical population-size-dependent Bienaymé–Galton–Watson branching processes

GREENSHTEIN, E., DOR, A. and KORACH, E. Optimal and myopic search in a binary random vector

GRÜBEL, RUDOLF Hoare's selection algorithm: a Markov chain approach

GUILLEMIN, FABRICE and PINCHON, DIDIER Continued fraction analysis of the duration of an excursion in an $M/M/\infty$ system

GUTIERREZ, R., RICCIARDI, L.M., ROMAN, P., and TORRES, F. First-passage-time densities for time-non-homogeneous diffusion processes

HAVIV, MOSHE and PUTERMAN, MARTIN L. Bias optimality in controlled queueing systems

HEYDE, C.C. and YANG, Y. On defining long-range dependence

HOOGHIEMSTRA, GERARD and MEESTER, L. E. The extremal index in 10 seconds

HORVATH, LAJOS Diffusion approximation for random walks on anisotropic lattices

JELENKOVIC, P.R. and LAZAR, A.A. Subexponential asymptotics of a Markov-modulated $G/G/1$ queue

JORGENSEN, BENT and SONG, XUE-KUN Stationary time-series models with exponential dispersion model margins

KEMP, ADRIENNE W. Absorption sampling and the absorption distribution

KENNEDY, D.P. and KERTZ, R.P. A prophet inequality for independent random variables with finite variances

KOCHAR, S.C., PEREZ, J.M. and FERRANDIZ, J.M. Partial orderings of distributions based on right-spread functions

KOLESNIK, ALEXANDER The equations of Markovian random evolutions in a line

KOUTRAS, M.V. and ALEXANDROU, V.A. Sooner waiting time problems in a sequence of trinomial trials

KRATZ, MARIE F. and ROOTZÉN, HOLGER On the rate of convergence for extremes of mean square differentiable stationary normal processes

KROESE, DIRK P. Heavy traffic analysis for continuous polling models

KURANO, M., SONG, J., HOSAKA, M., and HUANG, Y. Controlled Markov set-chains with discounting

LARGET, BRET A canonical representation for aggregated Markov processes

LAST, G. and SZEKLI, R. Stochastic comparison of repairable systems by coupling

LEDOUX, JAMES A geometric invariant in weak lumpability of finite Markov chains

LEFEBVRE, MARIO On the inverse of the first hitting time problem for bidimensional processes

LIN, GWO DONG On weak convergence within a family of life distributions

Downloaded from https://www.cambridge.org/core. IP address: 207.241.231.81, on 02 May 2019 at 15:45:12, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S0021900200101214

LUND, ROBERT B. The geometric convergence rate of a Lindley random walk
MA, CHUNSHENG A note on stochastic ordering of order statistics
MARTIN, R.J. and WALKER, A.M. A power-law model and other models for long-range dependence
MCCORMICK, WILLIAM P. Extremes for shot noise processes with heavy tailed amplitudes
MÖHLE, M. Robustness results for the coalescent
NAKATSUKA, TOSHINAO Absorbing process in the recursive stochastic equations
O'CONNELL, NEIL Large deviations for departures from a shared buffer
O'CONNELL, NEIL Queue-lengths and departures at a single-server, multi-class queue
PAULSEN, VOLKERT The moments of FIND
PETAKOS, K. and TSAPELAS, T. Reliability analysis for systems in random environment
PHATARFOD, R.M., PRYDE, A.J. and DYTE, D. The linear search problem with Markov dependent requests
PREATER, J. $M/M/\infty$ transience revisited
RAHIMOV, IBRAHIM Multitype processes with reproduction-dependent immigration
RENSHAW, E. and DAI, Y. Regularity and symmetry results for birth–death–migration processes
RIGHTER, RHONDA Stochastic scheduling for a two machine open shop
ROBERTS, G.O., ROSENTHAL, J.S. and SCHWARTZ, P.O. Convergence properties of perturbed Markov chains
ROTERS, MARKUS Optimal stopping in a dice game
SABNIS, S.V. and NAIR, MINI R. Coherent structures and unimodality
SCARSINI, MARCO Multivariate convex orderings, dependence, and stochastic equality
SCHÖTTL, A. Optimal stopping of a risk reserve process with interest and cost rates
SIMONOT, F. Convergence rate for the distributions of $GI/M/1/n$ and $M/GI/1/n$ as $n \to \infty$
SRIRAM, T.N. Asymptotic expansions for array branching processes with applications to bootstrapping
SZCZOTKA, WLADYSLAW Asymptotic stationarity of queues
TOYOIZUMI, HIROSHI Nonparametric estimate of virtual waiting time distribution from count data
VERMET, F. Asymptotic behaviour and phase transition for a non-symmetric Edwards measure on $\mathbb{Z}$
WATKINS, JOSEPH C. Mechanical models for cell movement: locomotion, translocation, migration
WONG, TITYIK Preservation of multivariate stochastic orders under multivariate shock models
XIA, AIHUA On the rate of Poisson process approximation to Bernoulli process
XIE, M. and LAI, C.D. On reliability bounds via conditional equalities
XU, JIAN-LUN Characterizations of the exponential distribution via the blocking time in a queueing system with an unreliable server

A similar list of papers accepted for publication in *Advances in Applied Probability* appears at the end of each issue of that journal.

The Author's Guide to the Applied Probability Journals

The guide is now available in electronic form from our Web site. It contains advice on how best to prepare your paper for submission to Applied Probability Trust journals, and how to use our LaTeX 2_ε and BibTeX packages. Point your browser to:

http://www.shef.ac.uk/~apt/

Downloaded from https://www.cambridge.org/core. IP address: 207.241.231.81, on 02 May 2019 at 15:45:12, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S0021900200101214

ADVANCES IN APPLIED PROBABILITY

The main function of AAP is to define areas of recent progress and potential development in applied probability. The Editorial Board would like to encourage the submission of review papers summarising and coordinating recent results. In addition to review papers, AAP is also a medium of publication for

- longer research papers, which may include expository material
- expository papers on branches of mathematics of interest to probabilists
- papers outlining areas in which probability models can be usefully developed
- papers presented at conferences which do not publish their proceedings
- letters to the editor on any appropriate topic

AAP also includes a section devoted to stochastic geometry and statistical applications. Volume 29 Number 3 of AAP will contain the following papers:

Stochastic Geometry and Statistical Applications

M. APPEL AND R. RUSSO. Maximum vertex degree of a graph on uniform points in $[0,1]^d$

M. APPEL AND R. RUSSO. Minimum vertex degree of a graph on uniform points in $[0,1]^d$

L.B. KLEBANOV AND S.T. RACHEV. Computer tomography and quantum mechanics

General Applied Probability

F. SUN AND M.S. WATERMAN. Whole genome amplification and branching processes

M. CRAMER. Stochastic analysis of 'simultaneous merge sort'

L.G. HANIN *ET AL*. A stochastic model of carcinogenesis and tumor size at detection

H.R. GAIL *ET AL*. Non-skip-free $M/G/1$ and $G/M/1$ type Markov chains

P.D. FEIGIN AND S.I. RESNICK. Linear programming estimators and bootstrapping for heavy tailed phenomena

C.D. FUH. Corrected diffusion approximations for ruin probabilities in a Markov random walk

A. SIMONIAN *ET AL*. Asymptotic estimates for blocking probabilities in a large multi-rate loss network

T. LAURENT. Near complete decomposability: bounding the error by a stochastic comparison method

S. LEE. Total positivity of Markov chains and the failure rate character of some first passage times

Subscription rates (per volume) for AAP are the same as for JAP (see the inside back cover). A discount of 10% is allowed to subscribers who order both journals at the same time directly from the Applied Probability Office. A detailed price list, including back issues, is available on request. Payment by credit card or by cheque (on a UK, US or Australian bank) is accepted.

All orders, enquiries, submissions and correspondence should be sent to:

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

Downloaded from https://www.cambridge.org/core. IP address: 207.241.231.81, on 02 May 2019 at 15:45:12, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S0021900200101214

SUBSCRIPTION RATES

Subscription rates (post free) for volume **34** (1997) of the *Journal of Applied Probability* are as follows:

US$197.00; $A261.00; £127.00 for libraries and institutions;
US$65.70; $A87.00; £42.35 for individuals belonging to a recognised scientific society.

Members of the London Mathematical Society should apply direct to the Secretary of the Society for copies of the *Journal*.

Please send all enquiries to: Applied Probability, School of Mathematics and Statistics, The University, Sheffield S3 7RH, UK.

We can provide back issue prices on application. Cheques, money orders, etc. should be made out to APPLIED PROBABILITY. Payment is accepted in US, UK or Australian currency or by VISA or Mastercard (phone: +44 114 222 3922; fax: +44 114 272 9782).

NOTES FOR CONTRIBUTORS

Papers published in the *Journal* are of two kinds:

(1) *research papers* not exceeding 20 printed pages;

(2) *short communications* of a few printed pages in the nature of notes or brief accounts of work in progress.

Review papers, longer research papers and *letters to the editor* are published in *Advances in Applied Probability*, a companion journal. (Note: Letters relating specifically to papers which have appeared in the *Journal of Applied Probability* will continue to appear in the *Journal*.)

The editors may publish accepted papers in either journal, according to the space available, in order to meet the 15-month deadline in publication referred to below.

Submission of papers

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. Papers will not be reprinted without the written permission of the Trust. It is the policy not to accept for publication papers which cannot appear in print within 15 months of the date of receipt of the final version. Fifty reprints of each paper will be provided free; additional reprints are available at cost.

Papers should be written in English or French; papers in other languages may be accepted by the editors, but will appear (subject to the author's agreement) in English or French translation. Please supply *three* double-spaced hard copies, at least one of which should be printed on one side of the paper only. The paper should include: (1) a short abstract of approximately 4–10 lines giving a non-mathematical description of the subject matter and results; (2) list of keywords detailing the contents for the purpose of computerised information retrieval; (3) primary and secondary classifications according to the 1991 Mathematics Subject Classification, to be found in the 1990 Annual Index of *Mathematical Reviews*.

Authors are advised to consult *The Author's Guide to the Applied Probability Journals* when preparing papers for submission. A copy of this guide may be obtained free of charge from the Applied Probability Office. An updated version of the guide, with LATEX style files, can be obtained in electronic form on http://www.shef.ac.uk/~apt or on PC-compatible disk from the Applied Probability Office.

For efficiency in processing, authors are requested to send all submissions to the Applied Probability Office in Sheffield, rather than to individual editors. The address for all submissions is:

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

COPYRIGHT

The copyright of all published papers shall be vested in the Trust. When a paper is accepted for publication, the Trust requests the author(s) to sign a form assigning copyright to the Trust. 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 base fee of $00.70 per copy, plus .20 per page is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923, USA. 0021–9002/97 $00.70 + .20.

Downloaded from https://www.cambridge.org/core. IP address: 207.241.231.81, on 02 May 2019 at 15:45:12, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S0021900200101214

Volume 34 Number 2

Research Papers

293 C. KLÜPPELBERG AND T. MIKOSCH. Large deviations of heavy-tailed random sums with applications in insurance and finance

309 J. P. DION AND N. M. YANEV. Limit theorems and estimation theory for branching processes with an increasing random number of ancestors

328 AKIO TANIKAWA. On the rate of convergence of Borovkov's multidimensional ergodic Markov chain

340 TOMMY NORBERG. On the time a Markov chain spends in a lumped state

346 SHUI FENG. The propagation of chaos of multitype mean field interacting particle systems

363 ANISH SARKAR. Continuity and convergence of the percolation function in continuum percolation

372 MARCO CAMPI. A unique representation theorem for the conditional expectation of stationary processes and application to dynamic estimation problems

381 DIRK TASCHE. On the second Borel–Cantelli lemma for strongly mixing sequences of events

395 Y. KEBIR. Laplace transforms and the renewal equation

404 MOSHE SHAKED AND TITYIK WONG. Stochastic orders based on ratios of Laplace transforms

420 MOSHE SHAKED AND TITYIK WONG. Stochastic comparisons of random minima and maxima

426 RAÚL GOUET. Strong convergence of proportions in a multicolor Pólya urn

436 M. MÖHLE. Fixation in bisexual models with variable population sizes

449 DHAIFALLA K. AL-MUTAIRI, TALAL M. AL-KHAMIS AND MOHAMED S. ABDEL-HAMEED. A Bayesian analysis of layered defense systems

458 M. D. RUIZ-MEDINA AND M. J. VALDERRAMA. Orthogonal representations of random fields and an application to geophysics data

477 A. D. BARBOUR AND R. M. PHATARFOD. Dimensioning a multiple hashing scheme

487 ESTHER FROSTIG AND TAPANI LEHTONEN. Stochastic comparisons for fork-join queues with exponential processing times

498 OFFER KELLA. Stochastic storage networks: stationarity and the feedforward case

508 J. PREATER. A perpetuity and the $M/M/\infty$ ranked server system

514 NICOLE BÄUERLE. Monotonicity results for $MR/GI/1$ queues

525 ENRICO FAGIUOLI AND FRANCO PELLEREY. Moment inequalities for sums of DMRL random variables

536 SARA-ANNE WOODHAM AND DONALD ST P. RICHARDS. Comparison of system reliability functions under laboratory and common operating environments

546 WEI LI, DINGHUA SHI AND XIULI CHAO. Reliability analysis of $M/G/1$ queueing systems with server breakdowns and vacations

Short Communications

556 GEOFFREY F. YEO. Duration of a secretary problem

559 YONG-JIN WANG. A proof of the persistence criterion for a class of superprocesses

Published by the **Applied Probability Trust** in association with the **London Mathematical Society**
Copyright © 1997 by the **Applied Probability Trust**
ISSN 0021–9002

Downloaded from https://www.cambridge.org/core. IP address: 207.241.231.81, on 02 May 2019 at 15:45:12, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S0021900200101214