Theory of Probability and Mathematical Statistics

Number 70 2005

A Translation of

ТЕОРІЯ ЙМОВІРНОСТЕЙ ТА МАТЕМАТИЧНА СТАТИСТИКА

ВИПУСК 70 2004

American Mathematical Society

Providence, Rhode Island USA

ISSN 0094-9000

THEORY OF PROBABILITY AND MATHEMATICAL STATISTICS

A translation of

ТЕОРІЯ ЙМОВІРНОСТЕЙ ТА МАТЕМАТИЧНА СТАТИСТИКА

Originally published in Ukrainian by TBiMC.

© TBiMC, 2004

© Київський університет, 2004

Editorial Board

A. V. Skorokhod (Editor-in-Chief)
M. Ĭ. Yadrenko (Deputy Editor-in-Chief)
M. I. Portenko (Deputy Editor-in-Chief)
A. Ya. Olenko (Executive Secretary)

V. V. Anīsīmov
V. V. Buldygin
A. Ya. Dorogovtsev
N. V. Kartashov
V. S. Korolyuk
Yu. V. Kozachenko
M. M. Leonenko
Yu. M. Lin′kov
M. P. Moklyachuk
E. Seneta
D. S. Sil′vestrov
O. K. Zakusilo

SUBSCRIPTION INFORMATION. The 2005 subscription is for Numbers 70 and 71. Beginning in 2004, *Theory of Probability and Mathematical Statistics* is accessible from `www.ams.org/journals/`. Subscription prices for 2005 are US$616 list; US$493 institutional member. Upon request, subscribers to paper delivery of this journal are also entitled to receive electronic delivery. For paper delivery, subscribers outside the United States and India must pay a postage surcharge of US$6; subscribers in India must pay a postage surcharge of US$13. Expedited delivery to destinations in North America US$7; elsewhere US$19. A late charge of 10% of the subscription price will be imposed upon orders received from nonmembers after January 1 of the subscription year.

BACK NUMBER INFORMATION. For back issues see `www.ams.org/bookstore`.

Subscriptions and orders should be addressed to American Mathematical Society, P.O. Box 845904, Boston, MA 02284-5904, USA. *All orders must be accompanied by payment.* Other correspondence should be addressed to 201 Charles Street, Providence, RI 02904-2294, USA.

COPYING AND REPRINTING. Material in this journal may be reproduced by any means for educational and scientific purposes without fee or permission with the exception of reproduction by services that collect fees for delivery of documents and provided that the customary acknowledgment of the source is given. This consent does not extend to other kinds of copying for general distribution, for advertising or promotional purposes, or for resale. Requests for permission for commercial use of material should be addressed to the Acquisitions Department, American Mathematical Society, 201 Charles Street, Providence, Rhode Island 02904-2294, USA. Requests can also be made by e-mail to `reprint-permission@ams.org`.

Theory of Probability and Mathematical Statistics is published by the American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294, USA and is mailed from Providence, Rhode Island. Postmaster: Send address changes to Theory of Probability and Mathematical Statistics, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294, USA.

© 2005, American Mathematical Society. All rights reserved.

This journal is indexed in *Mathematical Reviews* and *Zentralblatt MATH*

Printed in the United States of America.

⊗ The paper used in this journal is acid-free and falls within the guidelines established to ensure permanence and durability.

10 9 8 7 6 5 4 3 2 1 10 09 08 07 06 05

Theory of Probability and Mathematical Statistics

Number 70 2005

A Translation of

ТЕОРІЯ ЙМОВІРНОСТЕЙ ТА МАТЕМАТИЧНА СТАТИСТИКА

ВИПУСК 70 2004

American Mathematical Society

Providence, Rhode Island USA
ISSN 0094-9000

THEORY OF PROBABILITY AND MATHEMATICAL STATISTICS

A translation of

ТЕОРІЯ ЙМОВІРНОСТЕЙ ТА МАТЕМАТИЧНА СТАТИСТИКА

Originally published in Ukrainian by TBiMC.

© TBiMC, 2004

© Київський університет, 2004

Editorial Board

A. V. Skorokhod (Editor-in-Chief)
M. Ĭ. Yadrenko (Deputy Editor-in-Chief)
M. I. Portenko (Deputy Editor-in-Chief)
A. Ya. Olenko (Executive Secretary)

V. V. Anīsīmov
V. V. Buldygin
A. Ya. Dorogovtsev
N. V. Kartashov
V. S. Korolyuk
Yu. V. Kozachenko
M. M. Leonenko
Yu. M. Lin′kov
M. P. Moklyachuk
E. Seneta
D. S. Sil′vestrov
O. K. Zakusilo

SUBSCRIPTION INFORMATION. The 2005 subscription is for Numbers 70 and 71. Beginning in 2004, *Theory of Probability and Mathematical Statistics* is accessible from `www.ams.org/journals/`. Subscription prices for 2005 are US$616 list; US$493 institutional member. Upon request, subscribers to paper delivery of this journal are also entitled to receive electronic delivery. For paper delivery, subscribers outside the United States and India must pay a postage surcharge of US$6; subscribers in India must pay a postage surcharge of US$13. Expedited delivery to destinations in North America US$7; elsewhere US$19. A late charge of 10% of the subscription price will be imposed upon orders received from nonmembers after January 1 of the subscription year.

BACK NUMBER INFORMATION. For back issues see `www.ams.org/bookstore`.

Subscriptions and orders should be addressed to American Mathematical Society, P.O. Box 845904, Boston, MA 02284-5904, USA. *All orders must be accompanied by payment.* Other correspondence should be addressed to 201 Charles Street, Providence, RI 02904-2294, USA.

COPYING AND REPRINTING. Material in this journal may be reproduced by any means for educational and scientific purposes without fee or permission with the exception of reproduction by services that collect fees for delivery of documents and provided that the customary acknowledgment of the source is given. This consent does not extend to other kinds of copying for general distribution, for advertising or promotional purposes, or for resale. Requests for permission for commercial use of material should be addressed to the Acquisitions Department, American Mathematical Society, 201 Charles Street, Providence, Rhode Island 02904-2294, USA. Requests can also be made by e-mail to `reprint-permission@ams.org`.

Theory of Probability and Mathematical Statistics is published by the American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294, USA and is mailed from Providence, Rhode Island. Postmaster: Send address changes to Theory of Probability and Mathematical Statistics, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294, USA.

© 2005, American Mathematical Society. All rights reserved.

This journal is indexed in *Mathematical Reviews* and *Zentralblatt MATH*

Printed in the United States of America.

⊗ The paper used in this journal is acid-free and falls within the guidelines established to ensure permanence and durability.

10 9 8 7 6 5 4 3 2 1 10 09 08 07 06 05

CONTENTS

Rita Giuliano Antonini and Luca Pratelli, A strong law of large numbers for generalized almost sure central limit theorems 1
V. V. Buldygin, O. I. Klesov, and J. G. Steinebach, Some properties of asymptotic quasi-inverse functions and their applications I 11
Nguyen Huu Du, On an extension of the Lyapunov criterion of stability for quasi-linear systems via integral inequalities methods 29
B. A. Zalesky, Gibbs classifiers 41
Yu. O. Ivan'ko, Asymptotics of empirical Bayes risk in the classification of a mixture of two components with varying concentrations 53
T. V. Kadankova, On the joint distribution of the supremum, infimum, and the value of a semicontinuous process with independent increments 61
Vladimir S. Korolyuk and Nikolaos Limnios, Diffusion approximation of evolutionary systems with equilibrium in asymptotic split phase space 71
R. Maĭboroda and O. Kubaĭchuk, Improved estimators for moments constructed from observations of a mixture 83
V. V. Masol, Series expansion for the probability that a random Boolean matrix is of maximal rank 93
A. V. Melnikov and M. L. Nechaev, On the pricing of equity-linked life insurance contracts in Gaussian financial environment 105
Tibor K. Pogány, A new (probabilistic) proof of the Diaz–Metcalf and Pólya–Szegő inequalities and some applications 113
D. V. Poryvaĭ, The invariance principle for a class of dependent random fields 123
D. Pokhyl'ko, Wavelet estimators of a density constructed from observations of a mixture 135
M. V. Prats'ovytyĭ and O. M. Baranovs'kiĭ, Properties of distributions of random variables with independent differences of consecutive elements of the Ostrogradskiĭ series 147
V. M. Radchenko, On the product of a random and a real measure 161
G. Shurenkov, Asymptotic behavior of median estimators of multiple change points 167
V. K. Yasins'kiĭ and S. V. Antonyuk, On the properties of the second moment of solutions of stochastic differential-functional equations with varying coefficients 177

UKRAINIAN CONTENTS*

Rita Giuliano Antonini, Luca Pratelli
A strong law of large numbers for generalized almost sure central limit theorems 1

В. В. Булдигін, О. І. Клесов, Й. Г. Штайнебах
Про деякі властивості асимптотично квазіобернених функцій та їх застосування I 9

Nguyen Hui Du
On an extension of Lyapunov criterion of stability for quasi-linear systems via integral inequalities methods 26

Б. А. Залесский
Гиббсовские классификаторы 36

Ю. О. Іванько
Асимптотика емпірично-баєсового ризику при класифікації суміші двох компонент зі змінними концентраціями 47

Т. В. Каданкова
Про сумісний розподіл supremum'a, infimum'a та значення напівнеперервного процесу з незалежними приростами 54

Vladimir S. Korolyuk, Nikolaos Limnios
Diffusion approximation of evolutionary systems with equilibrium in asymptotic split phase space 63

Р. Майборода, О. Кубайчук
Виправлені оцінки для моментів по спостереженнях із суміші 74

В. В. Масол
Розклад в ряд ймовірності появи випадкової булевої матриці максимального рангу 82

A. V. Melnikov, M. L. Nechaev
On the pricing of equity linked-life insurance contracts in Gaussian financial environment 94

Тібор К. Погані
Нове (ймовірнісне) доведення нерівностей Діаза–Меткалфа та Пойа–Сеге та деякі їх наслідки 101

Д. В. Порывай
Принцип инвариантности для некоторого класса зависимых случайных полей 110

Д. Похилько
Вейвлет-оцінки щільності по спостереженням із суміші 121

*The American Mathematical Society scheme for transliteration of Cyrillic may be found at the end of index issues of *Mathematical Reviews*.

М. В. Працьовитий, О. М. Барановський
Властивості розподілів випадкових величин з незалежними різницями послідовних елементів ряду Остроградського 131

В. М. Радченко
Про добуток випадкової та дійсної мір 144

Г. Шуренков
Асимптотика медіанних оцінок для багатьох моментів зміни 149

В. К. Ясинський, С. В. Антонюк
Про властивості другого моменту розв'язків стохастичних диференціально-функціональних рівнянь із змінними коефіцієнтами 157

0094-9000(2005)70;1-Z