Theory of Probability and Mathematical Statistics

Number 75 2007

A Translation of

ТЕОРІЯ ЙМОВІРНОСТЕЙ ТА МАТЕМАТИЧНА СТАТИСТИКА

ВИПУСК 75 2006



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, 2006

© Київський університет, 2006

Editorial Board

A. V. Skorokhod (Editor-in-Chief)

Yu. V. Kozachenko (Deputy Editor-in-Chief)

M. I. Portenko (Deputy Editor-in-Chief)

A. Ya. Olenko (Executive Secretary)

V. V. Anīsīmov Yu. S. Mishura V. V. Buldygin M. P. Moklyachuk

O. V. Ivanov E. Seneta

N. V. Kartashov D. S. Sil'vestrov V. S. Korolyuk O. K. Zakusilo

M. M. Leonenko

SUBSCRIPTION INFORMATION. The 2007 subscription is for Numbers 74 and 75. Beginning in 2004, Theory of Probability and Mathematical Statistics is accessible from www.ams.org/journals/. Subscription prices for 2007 are US\$659 list; US\$527 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 (ISSN 0094-9000) 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.

© 2007, American Mathematical Society. All rights reserved. This journal is indexed in *Mathematical Reviews* and *Zentralblatt MATH*. This journal is archived in *Portico*.

Printed in the United States of America.

 \otimes 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 12 11 10 09 08 07

Theory of Probability and Mathematical Statistics

Number 75 2007

A Translation of

ТЕОРІЯ ЙМОВІРНОСТЕЙ ТА МАТЕМАТИЧНА СТАТИСТИКА

ВИПУСК 75 2006



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, 2006

© Київський університет, 2006

Editorial Board

A. V. Skorokhod (Editor-in-Chief)

Yu. V. Kozachenko (Deputy Editor-in-Chief)

M. I. Portenko (Deputy Editor-in-Chief)

A. Ya. Olenko (Executive Secretary)

V. V. Anīsīmov Yu. S. Mishura V. V. Buldygin M. P. Moklyachuk

O. V. Ivanov E. Seneta

N. V. Kartashov D. S. Sil'vestrov V. S. Korolyuk O. K. Zakusilo

M. M. Leonenko

SUBSCRIPTION INFORMATION. The 2007 subscription is for Numbers 74 and 75. Beginning in 2004, Theory of Probability and Mathematical Statistics is accessible from www.ams.org/journals/. Subscription prices for 2007 are US\$659 list; US\$527 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 (ISSN 0094-9000) 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.

© 2007, American Mathematical Society. All rights reserved. This journal is indexed in *Mathematical Reviews* and *Zentralblatt MATH*. This journal is archived in *Portico*.

Printed in the United States of America.

 \otimes 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 12 11 10 09 08 07

CONTENTS

S. V. Degtyar', The moments of the artificial regeneration for an asymptotically	
degenerate family of Markov functionals	1
I. I. Ezhov and V. F. Kadankov, Boundary functionals for the superposition	
of a random walk and a sequence of independent random variables	ç
T. Kadankova, Exit, passage, and crossing times and overshoots for a Poisson	
compound process with an exponential component	23
M. V. Kartashov, The stability of transient quasi-homogeneous Markov	
semigroups and an estimate of the ruin probability	41
Yu. V. Kozachenko and Yu. S. Mishura, Maximal upper bounds for	
the moments of stochastic integrals and solutions of stochastic differential	
equations with respect to fractional Brownian motion with Hurst index	
H < 1/2. I	51
V. Korolyuk and Je. Carkovs, On stochastic stability of Markov evolution	0.2
associated with impulse Markov dynamical systems	65
N. Lodatko and R. Maĭboroda, An adaptive moment estimator of a parameter	06
of a distribution constructed from observations with admixture	71
I. K. Matsak, The ordinal convergence and Glivenko–Cantelli type theorems in	1 1
$L_p(-\infty,\infty)$	83
Yu. S. Mishura and S. A. Il'chenko, Stochastic integrals and stochastic	0.
,	93
differential equations with respect to the fractional Brownian field	93
M. P. Moklyachuk and O. Yu. Masyutka, On the problem of filtration for	100
vector stationary sequences	109
E. M. Moldavs'ka, Asymptotic distributions of least squares estimators of the	
coefficients in the model of linear regression with nonlinear constraints and	101
long-memory dependence	121
Yu. I. Petunin and M. G. Semeĭko, Mixed empirical point random processes	100
in compact metric spaces. II	139
A. Yu. Pilipenko, Generalized differentiability with respect to the initial data of	
a flow generated by a stochastic equation with reflection	147
V. M. Radchenko, Parameter-dependent integrals with respect to general random	
measures	161
K. V. Ral'chenko, Two-parameter Garsia–Rodemich–Rumsey inequality and its	
application to fractional Brownian fields	167
Je. Carkovs, I. Vernigora, and V. Yasinskiĭ, On stochastic stability of Markov	
dynamical systems	179
M. Shykula, Asymptotic quantization errors for unbounded quantizers	189

UKRAINIAN CONTENTS*

С. В. Дегтярь Про моменти "штучної" регенерації для гранично виродженої сім'ї	
марковських функціоналів	1
І. І. Єжов, В. Ф. Каданков	
Граничні функціонали для суперпозиції випадкового блукання і по- слідовності незалежних величин	8
Т. Каданкова	
Вихід з інтервалу і входження, перестриби і перетини інтервалу про- цесом Пуассона з показниковою компонентою	21
M. B. Kapmawos	
Стійкість транзієнтних квазі-однорідних марковських півгруп та оцінка ймовірності розорення	36
Ю. В. Козаченко, Ю. С. Мішура	
Максимальні верхні оцінки моментів стохастичних інтегралів і розв'язків стохастичних диференціальних рівнянь, що містять дробовий броунів рух з індексом Хюрста $H < 1/2$. І	45
V. Korolyuk, Je. Carkovs	
On stochastic stability of Markov evolution associated with impulse Markov dynamical systems	57
Н. Лодатко, Р. Майборода	
Адаптивна моментна оцінка параметру розподілу по спостереженнях з домішкою	61
I. K. Mayar	
Порядкова збіжність і теореми типу Глівенка–Кантеллі в $L_p(-\infty,\infty)$	71
Ю. С. Мішура, С. А. Ільченко	
Стохастичні інтеграли та стохастичні диференціальні рівняння, що містять дробове броунівське поле	80
М. П. Моклячук, О. Ю. Масютка Про задачу фільтрації векторних стаціонарних послідовностей	95
Е. М. Молдавська	
Асимптотичні розподіли оцінок найменших квадратів коефіцієнтів лінійної регресії із нелінійними обмеженнями та сильною залежністю	105
Ю. І. Петунін, М. Г. Семейко	100
Змішані емпіричні випадкові точкові процеси в компактних метричних просторах. 2	121

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

А. Ю. Пилипенко	
Про узагальнену диференційованість за початковими даними пото- ку, породженого стохастичним рівнянням з відбиттям	127
В. М. Радченко	
Залежні від параметра інтеграли за загальними випадковими міра-	
К. В. Ральченко	
Двопараметрична нерівність Ґарсіа-Родеміха-Рамсі та її застосу- вання до дробових броунівських полів	144
Je. Carkovs, I. Vernigora, V. Yasinski On stochastic stability of Markov dynamical systems	155
M. Shykula Asymptotic quantization errors for unbounded quantizers	165

