St. Petersburg Mathematical Journal

(Formerly Leningrad Mathematical Journal)

Volume 23 Number 3 June 2012

A Translation of

РОССИЙСКАЯ АКАДЕМИЯ НАУК

АЛГЕБРА и АНАЛИЗ

TOM 23 № 3 2011



American Mathematical Society

Providence, Rhode Island USA ISSN 1061-0022

ST. PETERSBURG MATHEMATICAL JOURNAL

(Formerly Leningrad Mathematical Journal)

A translation of the Russian bimonthly

Алгебра и анализ

"Наука", С.-Петербургское отделение, 2011 г.

Editorial Board

A. B. Aleksandrov
A. N. Andrianov
N. Yu. Netsvetaev
(Deputy Editor-in-Chief)
N. K. Nikol'skiĭ
V. M. Babich
A. N. Parshin
A. D. Baranov
(Executive Secretary)
A. A. Suslin
V. S. Buslaev
T. A. Suslina

S. V. Buyalo
O. Ya. Viro
S. V. Kislyakov

N. N. Ural'tseva
(Deputy Editor-in-Chief)
V. P. Khavin

(Editor-in-Chief) A. L. Chistov
P. P. Kulish A. V. Yakovlev

SUBSCRIPTION INFORMATION. The 2012 subscription is for one volume of six issues. Beginning in 2004, St. Petersburg Mathematical Journal is accessible from www.ams.org/journals/. Subscription prices for Volume 23 are as follows: for paper delivery, US\$2049 list, US\$1639.20 institutional member; for electronic delivery, US\$1947 list, US\$1557.60 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\$19; subscribers in India must pay a postage surcharge of US\$29. Expedited delivery to destinations in North America US\$35; elsewhere US\$73. Subscription renewals are subject to late fees. See www.ams.org/journal-faq for more journal subscription information.

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

Orders for subscriptions and publications of the American Mathematical Society should be addressed to the 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, RI 02904-2294 USA. Requests can also be made by e-mail to reprint-permission@ams.org.

St. Petersburg Mathematical Journal (ISSN 1061-0022) is published bimonthly by the American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA. Periodicals postage paid at Providence, Rhode Island. Postmaster: Send address changes to St. Petersburg Mathematical Journal, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA.

Manuscripts should be addressed to "Algebra i Analiz", St. Petersburg Publishing Company of the Russian Academy of Sciences, Mendeleevskaya Liniya 1, St. Petersburg 199034, Russia. Submitting simultaneously a tex-file to the address pmj@pdmi.ras.ru is highly appreciated.

© 2012 American Mathematical Society. All rights reserved.

This journal is indexed in Mathematical Reviews and Zentralblatt MATH.

This journal is archived in *Portico*.

Translation authorized by the All-Union Agency for Author's Rights, Moscow. 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 17 16 15 14 13 12

St. Petersburg Mathematical Journal

Volume 23 Number 3 June 2012

A Translation of

РОССИЙСКАЯ АКАДЕМИЯ НАУК

АЛГЕБРА и АНАЛИЗ

TOM 23 № 3 2011



American Mathematical Society

Providence, Rhode Island USA ISSN 1061-0022

ST. PETERSBURG MATHEMATICAL JOURNAL

(Formerly Leningrad Mathematical Journal)

A translation of the Russian bimonthly

Алгебра и анализ

"Наука", С.-Петербургское отделение, 2011 г.

Editorial Board

A. B. Aleksandrov
A. N. Andrianov
N. Yu. Netsvetaev
(Deputy Editor-in-Chief)
N. K. Nikol'skiĭ
V. M. Babich
A. N. Parshin
A. D. Baranov
(Executive Secretary)
A. A. Suslin
V. S. Buslaev
T. A. Suslina

S. V. Buyalo
O. Ya. Viro
S. V. Kislyakov

N. N. Ural'tseva
(Deputy Editor-in-Chief)
V. P. Khavin

(Editor-in-Chief) A. L. Chistov
P. P. Kulish A. V. Yakovlev

SUBSCRIPTION INFORMATION. The 2012 subscription is for one volume of six issues. Beginning in 2004, St. Petersburg Mathematical Journal is accessible from www.ams.org/journals/. Subscription prices for Volume 23 are as follows: for paper delivery, US\$2049 list, US\$1639.20 institutional member; for electronic delivery, US\$1947 list, US\$1557.60 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\$19; subscribers in India must pay a postage surcharge of US\$29. Expedited delivery to destinations in North America US\$35; elsewhere US\$73. Subscription renewals are subject to late fees. See www.ams.org/journal-faq for more journal subscription information.

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

Orders for subscriptions and publications of the American Mathematical Society should be addressed to the 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, RI 02904-2294 USA. Requests can also be made by e-mail to reprint-permission@ams.org.

St. Petersburg Mathematical Journal (ISSN 1061-0022) is published bimonthly by the American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA. Periodicals postage paid at Providence, Rhode Island. Postmaster: Send address changes to St. Petersburg Mathematical Journal, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA.

Manuscripts should be addressed to "Algebra i Analiz", St. Petersburg Publishing Company of the Russian Academy of Sciences, Mendeleevskaya Liniya 1, St. Petersburg 199034, Russia. Submitting simultaneously a tex-file to the address pmj@pdmi.ras.ru is highly appreciated.

© 2012 American Mathematical Society. All rights reserved.

This journal is indexed in Mathematical Reviews and Zentralblatt MATH.

This journal is archived in *Portico*.

Translation authorized by the All-Union Agency for Author's Rights, Moscow. 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 17 16 15 14 13 12

CONTENTS

Research Papers

C. Badea, S. Grivaux, and V. Müller, The rate of convergence in the method	
of alternating projections	413
N. V. Budarina, On primitively 2-universal quadratic forms	435
A. M. Vershik and M. I. Graev, The Poisson model of the Fock space and representations of current groups	459
G. G. Gusev, Monodromy zeta-function of a polynomial on a complete intersection, and Newton polyhedra	511
H. Dong, Parabolic equations with variably partially VMO coefficients	521
S. V. Duzhin, Conway polynomial and Magnus expansion	541
A. A. Illarionov, Average number of local minima for three-dimensional integral lattices	551
S. A. Nazarov, Asymptotic formulas for trapped modes and for eigenvalues below the threshold of the continuous spectrum of a waveguide with a thin screening	001
barrier	571
I. M. Pevzner , Geometry of root elements in groups of type E_6	603

RUSSIAN CONTENTS *

Статьи

Badea C., Grivaux S., Müller V. The rate of convergence in the	
method of alternating projections	1
Бударина Н. В. О примитивно 2-универсальных квадратич-	
ных формах	31
Вершик А. М., Граев М. И. Пуассонова модель фоковского	
пространства и представления групп токов	63
Гусев Г. Г. Дзета-функция многочлена на полном пересече-	
нии и многогранники Ньютона	137
Dong H. Parabolic equations with variably partially VMO coef-	
ficients	150
Дужин С. В. Многочлен Конвея и разложение Магнуса	175
Илларионов А. А. Среднее количество относительных мини-	
мумов трехмерных целочисленных решеток	189
Назаров С. А. Асимптотика ловушечных мод и собственных	
чисел под порогом непрерывного спектра волновода с тон-	
ким экранирующим препятствием	216
Певзнер И. М. Геометрия корневых элементов в группах типа	
$\mathrm{E}_{6}.\ldots$	261

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

1061-0022(201206)23:3;1-U