

St. Petersburg Mathematical Journal

(Formerly Leningrad Mathematical Journal)

Volume 24 Number 4 August 2013

A Translation of

РОССИЙСКАЯ АКАДЕМИЯ НАУК

АЛГЕБРА
И
АНАЛИЗ

ТОМ 24 № 4 2012



American Mathematical Society

Providence, Rhode Island USA

ISSN 1061-0022 (print)

ISSN 1547-7371 (online)

ST. PETERSBURG MATHEMATICAL JOURNAL

(Formerly Leningrad Mathematical Journal)

A translation of the Russian bimonthly

Алгебра и анализ

“Наука”, С.-Петербургское отделение, 2012 г.

Editorial Board

A. B. Aleksandrov	A. V. Mal'yunin
A. N. Andrianov (Deputy Editor-in-Chief)	N. Yu. Netsvetaev
V. M. Babich	N. K. Nikol'skiĭ
A. D. Baranov (Executive Secretary)	A. N. Parshin
V. S. Buslaev	M. A. Semenov-Tyan-Shanskiĭ
S. V. Buyalo	A. A. Suslin
O. Ya. Viro	T. A. Suslina
S. V. Kislyakov (Editor-in-Chief)	N. N. Ural'tseva (Deputy Editor-in-Chief)
P. P. Kulish	V. P. Khavin
	A. L. Chistov
	A. V. Yakovlev

SUBSCRIPTION INFORMATION. The 2013 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 24 are as follows: for paper delivery, US\$2110 list, US\$1688 institutional member; for electronic delivery, US\$2005 list, US\$1604 institutional member. Upon request, subscribers to paper delivery of this journal are also entitled to receive electronic delivery. If ordering the paper version, add US\$5 for delivery within the United States; US\$19 for delivery outside the United States. 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 (print); ISSN 1547-7371 (online)) 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.

© 2013 American Mathematical Society. All rights reserved.

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

This journal is archived in *Portico* and in *CLOCKSS*.

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 18 17 16 15 14 13

St. Petersburg Mathematical Journal

Volume 24 Number 4 August 2013

A Translation of

РОССИЙСКАЯ АКАДЕМИЯ НАУК

АЛГЕБРА И АНАЛИЗ

ТОМ 24 № 4 2012



American Mathematical Society

Providence, Rhode Island USA

ISSN 1061-0022 (print)

ISSN 1547-7371 (online)

ST. PETERSBURG MATHEMATICAL JOURNAL

(Formerly Leningrad Mathematical Journal)

A translation of the Russian bimonthly

Алгебра и анализ

“Наука”, С.-Петербургское отделение, 2012 г.

Editorial Board

A. B. Aleksandrov	A. V. Maljutin
A. N. Andrianov (Deputy Editor-in-Chief)	N. Yu. Netsvetaev
V. M. Babich	N. K. Nikol'skiĭ
A. D. Baranov (Executive Secretary)	A. N. Parshin
V. S. Buslaev	M. A. Semenov-Tyan-Shanskiĭ
S. V. Buyalo	A. A. Suslin
O. Ya. Viro	T. A. Suslina
S. V. Kislyakov (Editor-in-Chief)	N. N. Ural'tseva (Deputy Editor-in-Chief)
P. P. Kulish	V. P. Khavin
	A. L. Chistov
	A. V. Yakovlev

SUBSCRIPTION INFORMATION. The 2013 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 24 are as follows: for paper delivery, US\$2110 list, US\$1688 institutional member; for electronic delivery, US\$2005 list, US\$1604 institutional member. Upon request, subscribers to paper delivery of this journal are also entitled to receive electronic delivery. If ordering the paper version, add US\$5 for delivery within the United States; US\$19 for delivery outside the United States. 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 (print); ISSN 1547-7371 (online)) 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.

© 2013 American Mathematical Society. All rights reserved.

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

This journal is archived in *Portico* and in *CLOCKSS*.

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 18 17 16 15 14 13

CONTENTS

Expository Survey

- A. Momeni and A. B. Venkov**, [Mayer's transfer operator approach to Selberg's zeta function](#) 529

Research Papers

- Yu. V. Brezhnev**, [Elliptic solitons, Fuchsian equations, and algorithms](#) 555
- L. V. Dieulefait, M. Mink, and B. Z. Moroz**, [On an elliptic curve defined over \$\mathbb{Q}\(\sqrt{-23}\)\$](#) 575
- V. N. Zhelyabin**, [New examples of simple Jordan superalgebras over an arbitrary field of characteristic 0](#) 591
- V. G. Zhuravlev**, [Moduli of toric tilings into bounded remainder sets and balanced words](#) 601
- H. König and V. Milman**, [An operator equation characterizing the Laplacian](#) 631
- N. V. Nagul**, [The logic-algebraic equations method in system dynamics](#) 645
- S. S. Platonov**, [Spectral synthesis in the space of functions of exponential growth on a finitely generated Abelian group](#) 663
- K. Yu. Fedorovskii**, [On \$C^m\$ -approximability of functions by polynomial solutions of elliptic equations on plane compact sets](#) 677

RUSSIAN CONTENTS*

СОДЕРЖАНИЕ

Обзоры

<i>Momeni A., Venkov A. B.</i> Mayer's transfer operator approach to Selberg's zeta function	1
--	---

Статьи

<i>Брежнев Ю. В.</i> Эллиптические солитоны, фуксовы уравнения и алгоритмы	34
<i>Dieulefait L. V., Mink M., Moroz B. Z.</i> On an elliptic curve defined over $\mathbb{Q}(\sqrt{-23})$	64
<i>Желябин В. Н.</i> Новые примеры простых йордановых супералгебр над произвольным полем характеристики нуль	84
<i>Журавлев В. Г.</i> Модули торических разбиений на множества ограниченного остатка и сбалансированные слова	97
<i>König H., Milman V.</i> An Operator equation characterizing the Laplacian.	137
<i>Нагул Н. В.</i> Метод логико-алгебраических уравнений в динамике систем	156
<i>Платонов С. С.</i> Спектральный синтез в пространстве функций экспоненциального роста на конечно порожденной абелевой группе	182
<i>Федоровский К. Ю.</i> О C^m -приближаемости функций полиномиальными решениями эллиптических уравнений на плоских компактах	201

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



1061-0022(201308)24:4;1-J