
VOLUME 135 NUMBER 4



APRIL 2007

WHOLE NUMBER 574

PROCEEDINGS

OF THE

A M E R I C A N M A T H E M A T I C A L S O C I E T Y

EDITED BY

Richard C. Bradley
Carmen C. Chicone
Ted Chinburg
Peter A. Clarkson
Walter Craig
Alexander N. Dranishnikov
Ronald A. Fintushel,
 Managing Editor
Paul Goerss
Matthew J. Gursky
Jim Haglund
Jonathan I. Hall
Jane M. Hawkins
Juha M. Heinonen
Birge Huisgen-Zimmerman
Marius Junge
Julia Knight

Michael T. Lacey
Gail R. Letzter
Wen-Ching Winnie Li
Martin Lorenz
Ken Ono
Daniel Ruberman
Andreas Seeger
Mei-Chi Shaw
Mikhail Shubin
Hart F. Smith
Chuu-Lian Terng
N. Tomczak-Jaegermann
Tatiana Toro
Bernd Ulrich
Edward C. Waymire
Michael I. Weinstein
Richard A. Wentworth
Jon G. Wolfson

PROVIDENCE, RHODE ISLAND USA

ISSN 0002-9939

Available electronically at
www.ams.org/proc/

Proceedings of the American Mathematical Society

This journal is devoted entirely to research in pure and applied mathematics.

Submission information. See **Information for Authors** at the end of this issue.

Publisher Item Identifier. The Publisher Item Identifier (PII) appears at the top of the first page of each article published in this journal. This alphanumeric string of characters uniquely identifies each article and can be used for future cataloging, searching, and electronic retrieval.

Postings to the AMS website. Articles are posted to the AMS website individually after proof is returned from authors and before appearing in an issue.

Subscription information. *Proceedings of the American Mathematical Society* is published monthly. Beginning January 1996 *Proceedings* is accessible from www.ams.org/journals/. Subscription prices for Volume 135 (2007) are as follows: for paper delivery, US\$1063 list, US\$850 institutional member, US\$957 corporate member, US\$638 individual member; for electronic delivery, US\$957 list, US\$766 institutional member, US\$861 corporate member, US\$574 individual member. Upon request, subscribers to paper delivery of this journal are also entitled to receive electronic delivery. If ordering the paper version, add US\$32 for surface delivery outside the United States and India; US\$49 to India. Expedited delivery to destinations in North America is US\$56; elsewhere US\$118. For paper delivery 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 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.

Excluded from these provisions is material in articles for which the author holds copyright. In such cases, requests for permission to use or reprint should be addressed directly to the author(s). (Copyright ownership is indicated in the notice in the lower right-hand corner of the first page of each article.)

Proceedings of the American Mathematical Society is published monthly by the American Mathematical Society at 201 Charles Street, Providence, RI 02904-2294 USA. Periodicals postage is paid at Providence, Rhode Island. Postmaster: Send address changes to *Proceedings*, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA.

© 2007 by the American Mathematical Society. All rights reserved.

This journal is indexed in *Mathematical Reviews*, *Zentralblatt MATH*, *Science Citation Index*[®], *Science Citation Index*[™]-*Expanded*, *ISI Alerting Services*SM, *CompuMath Citation Index*[®], and *Current Contents*[®]/*Physical, Chemical & Earth Sciences*.

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 12 11 10 09 08 07

PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY

CONTENTS

Vol. 135, No. 4

Whole No. 574

April 2007

A. ALGEBRA, NUMBER THEORY, AND COMBINATORICS

Guangxing Zeng, Henselian valuations and orderings of a commutative ring ...	929
Christos A. Athanasiadis, Thomas Brady, and Colum Watt, Shellability of noncrossing partition lattices	939
Yves de Cornulier, Finitely presentable, non-Hopfian groups with Kazhdan's Property (T) and infinite outer automorphism group	951
Walter Ferrer Santos and Alvaro Rittatore, Generalizations of Cayley's Ω -process	961
Stéphane R. Louboutin, Joël Rivat, and András Sárközy, On a problem of D. H. Lehmer	969
Jor-Ting Chan, Chi-Kwong Li, and Nung-Sing Sze, Mappings preserving spectra of products of matrices	977
Uğur Madran, Lower degree bounds for modular vector invariants	987
Winfried Kohlen, Sign changes of Hecke eigenvalues of Siegel cusp forms of genus two	997
Masataka Chida and Masanobu Kaneko, On ordinary primes for modular forms and the theta operator	1001

B. ANALYSIS

Radu Balan, Peter G. Casazza, Dan Edidin, and Gitta Kutyniok, A new identity for Parseval frames	1007
Mei Zhang and Changjiang Zhu, Global existence of solutions to a hyperbolic-parabolic system	1017
Nicolas Burq, Andrew Hassell, and Jared Wunsch, Spreading of quasimodes in the Bunimovich stadium	1029
A. G. Aksoy and B. L. Chalmers, Minimal numerical-radius extensions of operators	1039
Shu-wen Xiang, Equivalence of completeness and contraction property	1051
Birol Altin, On Banach lattices with Levi norms	1059
Alexander J. Izzo, Algebras generated by the disc algebra and bounded harmonic functions	1065
Xavier Buff and Arnaud Chéritat, How regular can the boundary of a quadratic Siegel disk be?	1073
Eve Oja and Märt Põldvere, Principle of local reflexivity revisited	1081
L. Birbrair, J. C. F. Costa, A. Fernandes, and M. A. S. Ruas, \mathcal{K} -bi-Lipschitz equivalence of real function-germs	1089
Yuan-Chuan Li and Sen-Yen Shaw, On characterization and perturbation of local C -semigroups	1097
Bassam Shayya, An affine restriction estimate in \mathbb{R}^3	1107
Z. Ditzian and A. V. Prymak, Sharp Marchaud and converse inequalities in Orlicz spaces	1115
David Damanik and Gerald Teschl, Bound states of discrete Schrödinger operators with super-critical inverse square potentials	1123
Hans Volkmer and Anton Zettl, Inverse spectral theory for Sturm-Liouville problems with finite spectrum	1129
Kenneth S. Berenhaut, John D. Foley, and Stevo Stević, The global attractivity of the rational difference equation $y_n = 1 + \frac{y_n - k}{y_n - m}$	1133

Jorge Mujica and Paula Takatsuka, A Schottky-type theorem for starlike domains in Banach spaces	1141
Henrik Petersson, Hypercyclicity in omega	1145
Belmesnaoui Aqzzouz, Redouane Nouira, and Larbi Zraoula, Compactness properties of operators dominated by AM-compact operators	1151
V. Indumathi and S. Lalithambigai, A new proof of proximality for M -ideals	1159
L. A. Coburn, Sharp Berezin Lipschitz estimates	1163
S. Rohde, Dimension distortion of hyperbolically convex maps	1169
Ioana Serban and Flavius Turcu, Compact perturbations of isometries	1175
Alexander Yu. Solynin, Hyperbolic convexity and the analytic fixed point function	1181

C. APPLIED MATHEMATICS

Jinqiao Duan and Balasubramanya T. Nadiga, Stochastic parameterization for large eddy simulation of geophysical flows	1187
---	------

E. LOGIC AND FOUNDATIONS

Albin L. Jones, More on partitioning triples of countable ordinals	1197
Kyriakos Keremedis and Eleftherios Tachtsis, Countable compact Hausdorff spaces need not be metrizable in ZF	1205
David Schrittesser, Lightface Σ_2^1 -indescribable cardinals	1213

F. STATISTICS AND PROBABILITY

István Berkes and Michel Weber, A law of the iterated logarithm for arithmetic functions	1223
--	------

G. TOPOLOGY

Mohsen Pourahmadi, Akihiko Inoue, and Yukio Kasahara, A prediction problem in $L^2(w)$	1233
--	------

Editorial Information

To be published in the *Proceedings*, a paper must be correct, new, nontrivial, and significant. Further, it must be well written and of interest to a substantial number of mathematicians. Piecemeal results, such as an inconclusive step toward an unproved major theorem or a minor variation on a known result, are in general not acceptable for publication. *Proceedings* Editors solicit and encourage publication of worthy papers of length not exceeding 10 published pages. Published pages are the same size as those generated in the style files provided for $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{T}\mathcal{E}\mathcal{X}$ or $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{T}\mathcal{E}\mathcal{X}$.

Information on the backlog for this journal can be found on the AMS website starting from <http://www.ams.org/proc>.

In an effort to make articles available as quickly as possible, articles are posted to the AMS website individually after proof is returned from authors and before appearing in an issue.

A Consent to Publish and Copyright Agreement is required before a paper will be published in this journal. After a paper is accepted for publication, the Providence office will send out a Consent to Publish and Copyright Agreement to all authors of the paper. By submitting a paper to this journal, authors certify that the results have not been submitted to nor are they under consideration for publication by another journal, conference proceedings, or similar publication.

Information for Authors

Initial submission. The AMS uses Centralized Manuscript Processing for initial submission. Authors should submit a PDF file using the Initial Manuscript Submission form found at www.ams.org/cgi-bin/peertrack/submission.pl, or send one copy of the manuscript to the following address: Centralized Manuscript Processing, PROCEEDINGS OF THE AMS, 201 Charles Street, Providence, RI 02904-2294 USA. If a paper copy is being forwarded to the AMS, indicate that it is for *Proceedings* and include the name of the corresponding author, contact information such as email address or mailing address, and the name of an appropriate Editor to review the paper (see the list of Editors below).

The first page of an article must consist of a *descriptive title*, followed by an *abstract* that summarizes the article in language suitable for workers in the general field (algebra, analysis, etc.). The *descriptive title* should be short, but informative; useless or vague phrases such as “some remarks about” or “concerning” should be avoided. The *abstract* should be at least one complete sentence, and at most 150 words. Included with the footnotes to the paper should be the 2000 *Mathematics Subject Classification* representing the primary and secondary subjects of the article. The classifications are accessible from www.ams.org/msc/. The list of classifications is also available in print starting with the 1999 annual index of *Mathematical Reviews*. The Mathematics Subject Classification footnote may be followed by a list of *key words and phrases* describing the subject matter of the article and taken from it. Journal abbreviations used in bibliographies are listed in the latest *Mathematical Reviews* annual index. The series abbreviations are also accessible from www.ams.org/publications/. To help in preparing and verifying references, the AMS offers MR Lookup, a Reference Tool for Linking, at www.ams.org/mrlookup/.

Electronically prepared manuscripts. The AMS encourages electronically prepared manuscripts, with a strong preference for $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{T}\mathcal{E}\mathcal{X}$. To this end, the Society has prepared $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{T}\mathcal{E}\mathcal{X}$ author packages for each AMS publication. Author packages include instructions for preparing electronic manuscripts, samples, and a style file that generates the particular design specifications of that publication series. Articles properly prepared using the $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{T}\mathcal{E}\mathcal{X}$ style file and the `\label` and `\ref` commands automatically enable extensive intra-document linking to the bibliography and other elements of the article for searching electronically on the Web. Because linking must often be added manually to electronically prepared manuscripts in other forms of $\mathcal{T}\mathcal{E}\mathcal{X}$, using $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{T}\mathcal{E}\mathcal{X}$ also reduces the amount of technical intervention once the files are received by the AMS. This results in fewer errors in processing and saves the author proofreading time. $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{T}\mathcal{E}\mathcal{X}$

papers also move more efficiently through the production stream, helping to minimize publishing costs.

$\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX is the highly preferred format of \TeX , but author packages are also available in $\mathcal{A}\mathcal{M}\mathcal{S}$ - \TeX . Those authors who make use of these style files from the beginning of the writing process will further reduce their own efforts. Manuscripts prepared electronically in \LaTeX or plain \TeX are normally not acceptable due to the high amount of technical time required to insure that the file will run properly through the AMS in-house production system. \LaTeX users will find that $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX is the same as \LaTeX with additional commands to simplify the typesetting of mathematics, and users of plain \TeX should have the foundation for learning $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX .

Authors may retrieve an author package from the AMS website starting from www.ams.org/tex/ or via FTP to [ftp.ams.org](ftp://ftp.ams.org) (login as `anonymous`, enter username as password, and type `cd pub/author-info`). The *AMS Author Handbook* and the *Instruction Manual* are available in PDF format following the author packages link from www.ams.org/tex/. The author package can also be obtained free of charge by sending email to tech-support@ams.org (Internet) or from the Publication Division, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA. When requesting an author package, please specify $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX or $\mathcal{A}\mathcal{M}\mathcal{S}$ - \TeX and the publication in which your paper will appear. Please be sure to include your complete email address.

After acceptance. The final version of the electronic manuscript should be sent to the Providence office immediately after the paper has been accepted for publication. The author should also send the final version of the paper to the Editor, who will forward a copy to the Providence office. Accepted electronically prepared manuscripts can be submitted via the web at www.ams.org/submit-book-journal/, sent via email to pub-submit@ams.org (Internet), or sent on diskette to the Electronic Prepress Department, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA. When sending a manuscript electronically via e-mail or diskette, please be sure to include a message indicating in which publication the paper has been accepted. No corrections will be accepted electronically. Authors must mark their changes on their proof copies and return them to the Providence office. Complete instructions on how to send files are included in the author package.

Electronic graphics. Comprehensive instructions on preparing graphics are available starting from www.ams.org/jourhtml/authors.html. A few of the major requirements are given here.

Submit files for graphics as EPS (Encapsulated PostScript) files. This includes graphics originated via a graphics application as well as scanned photographs or other computer-generated images. If this is not possible, TIFF files are acceptable as long as they can be opened in Adobe Photoshop or Illustrator. No matter what method was used to produce the graphic, it is necessary to provide a paper copy to the AMS.

Authors using graphics packages for the creation of electronic art should also avoid the use of any lines thinner than 0.5 points in width. Many graphics packages allow the user to specify a “hairline” for a very thin line. Hairlines often look acceptable when proofed on a typical laser printer. However, when produced on a high-resolution laser imagesetter, hairlines become nearly invisible and will be lost entirely in the final printing process.

Screens should be set to values between 15% and 85%. Screens which fall outside of this range are too light or too dark to print correctly. Variations of screens within a graphic should be no less than 10%.

AMS policy on making changes to articles after posting. Articles are posted to the AMS website individually after proof is returned from authors and before appearing in an issue. To preserve the integrity of electronically published articles, once an article is individually posted to the AMS website but not yet in an issue, changes cannot be made in place in the paper. However, an “Added after posting” section may be added to the paper right before the References when there is a critical error in the content of the paper. The “Added after posting” section gives the author an opportunity to correct this type

of critical error before the article is put into an issue for printing and before it is then reposted with the issue. The “Added after posting” section remains a permanent part of the paper. The AMS does not keep author-related information, such as affiliation, current address, and email address, up to date after a paper is initially posted.

Once the article is assigned to an issue, even if the issue has not yet been posted to the AMS website, corrections may be made to the paper by submitting a traditional errata article. The errata article will appear in a future print issue and will link back and forth on the web to the original article online.

Secure manuscript tracking on the Web and via email. Authors can track their manuscripts through the AMS journal production process using the personal AMS ID and Article ID printed in the upper right-hand corner of the Consent to Publish form sent to each author who publishes in AMS journals. Access to the tracking system is available from www.ams.org/mstrack/ or via email sent to mstrack-query@ams.org. To access by email, on the subject line of the message simply enter the AMS ID and Article ID. To track more than one manuscript by email, choose one of the Article IDs and enter the AMS ID and the Article ID followed by the word *all* on the subject line. An explanation of each production step is provided on the web through links from the manuscript tracking screen. Questions can be sent to proc-query@ams.org.

T_EX files available upon request. T_EX files are available upon request for authors by sending email to file-request@ams.org or by contacting the Electronic Prepress Department, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA. The request should include the title of the paper, the name(s) of the author(s), the name of the publication in which the paper has or will appear, and the volume and issue numbers if known. The T_EX file will be sent to the author making the request after the article goes to the printer. If the requestor can receive Internet email, please include the email address to which the file should be sent. Otherwise please indicate a diskette format and postal address to which a disk should be mailed. **Note:** Because T_EX production at the AMS sometimes requires extra fonts and macros that are not yet publicly available, T_EX files cannot be guaranteed to run through the author’s version of T_EX without errors. The AMS regrets that it cannot provide support to eliminate such errors in the author’s T_EX environment.

Inquiries. Any inquiries concerning a paper that has been accepted for publication that cannot be answered via the manuscript tracking system mentioned above should be sent to proc-query@ams.org or directly to the Electronic Prepress Department, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA.

Editors

The AMS uses Centralized Manuscript Processing for initial submissions to AMS journals. Authors should follow instructions listed on the Initial Submission page found at www.ams.org/proc/procsubmit.html.

Managing Editor: Ronald A. Fintushel, Michigan State University, East Lansing, MI 48824-1027 USA; e-mail: ronfint@math.msu.edu

1. ODE, PDE, GLOBAL ANALYSIS, AND DYNAMICAL SYSTEMS

Coordinating Editor: Chuu-Lian Terng, University of California, Irvine, CA 92697-3875 USA; e-mail: cterng@math.uci.edu

Dynamical systems and ergodic theory, Jane M. Hawkins, CB #3250, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599 USA; e-mail: jmh@math.unc.edu

Global analysis, Mikhail Shubin, Northeastern University, Boston, MA 02115 USA; e-mail: shubin@neu.edu

Ordinary differential equations and special functions, Carmen C. Chicone, University of Missouri, Columbia, MO 65211-0001 USA; e-mail: carmen@chicone.math.missouri.edu

Partial differential equations, Matthew J. Gursky, University of Notre Dame, 255 Hurley Hall, Notre Dame, IN 46556-4618 USA; e-mail: mgursky@nd.edu

2. TOPOLOGY AND GEOMETRY

Coordinating Editor: Jon G. Wolfson, Michigan State University, East Lansing, MI 48824-1027 USA; e-mail: wolfson@math.msu.edu

Algebraic topology, Paul Goerss, Northwestern University, Evanston, IL 60208-2730 USA; e-mail: pgoerss@math.northwestern.edu

Differential geometry (Riemannian geometry, complex geometry, and symplectic geometry), Jon G. Wolfson

Geometric analysis (geometric PDE, minimal surfaces, and harmonic maps), Richard A. Wentworth, Johns Hopkins University, Baltimore, MD 21218 USA; e-mail: wentworth@jhu.edu

Geometric topology, Alexander N. Dranishnikov, University of Florida, 358 Little Hall, Gainesville, FL 32611-8105 USA; e-mail: dranish@math.ufl.edu

Low dimensional topology, gauge theory, 4-manifolds, Daniel Ruberman, Brandeis University, Waltham, MA 02254-9110 USA; e-mail: ruberman@brandeis.edu

3. ANALYSIS

Coordinating Editor: Andreas Seeger, University of Wisconsin, Madison, WI 53706 USA; e-mail: seeger@math.wisc.edu

Banach spaces and linear functional analysis, N. Tomczak-Jaegermann, University of Alberta, Edmonton, AB, Canada T6G 2G1; e-mail: ntomczak@math.ualberta.ca; nicole.tomczak@ualberta.ca

Fourier analysis and dispersive PDE, Hart F. Smith, University of Washington, Box 354350, Seattle, WA 98195-4350 USA; e-mail: hart@math.washington.edu

Geometric measure theory and its applications, Tatiana Toro, University of Washington, Box 354350, Seattle, WA 98195-4350 USA; e-mail: toro@math.washington.edu

Harmonic analysis, Michael T. Lacey, School of Mathematics, Georgia Institute of Technology, 686 Cherry Street NW, Atlanta, GA 30332-4301 USA; e-mail: lacey@math.gatech.edu

One complex variable and potential theory, Juha M. Heinonen, University of Michigan, Ann Arbor, MI 48109-1109 USA; e-mail: PAMS1@umich.edu

Operator algebras, Marius Junge, University of Illinois at Urbana-Champaign, 1409 W. Green Street, Urbana, IL 61801-2975 USA; e-mail: junge@math.uiuc.edu

Several complex variables, Mei-Chi Shaw, University of Notre Dame, Notre Dame, IN 46556-0398 USA; e-mail: mei-chi.shaw.1@nd.edu

4. ALGEBRA, NUMBER THEORY, COMBINATORICS, AND LOGIC

Coordinating Editor: Martin Lorenz, Temple University, Philadelphia, PA 19122-6094 USA; e-mail: lorenz@temple.edu

Algebraic geometry, Ted Chinburg, University of Pennsylvania, Philadelphia, PA 19104-6395 USA; e-mail: ted@math.upenn.edu

Automorphic forms, number theory, and applications of number theory, Wen-Ching Winnie Li, Pennsylvania State University, University Park, PA 16802-6401 USA; e-mail: wli@math.psu.edu

Combinatorics, Jim Haglund, University of Pennsylvania, 209 S. 33rd Street, Philadelphia, PA 19104-6395 USA; e-mail: jhaglund@math.upenn.edu

Commutative algebra, Bernd Ulrich, Purdue University, West Lafayette, IN 47907-1395 USA; e-mail: ulrich@math.purdue.edu

Group theory, Jonathan I. Hall, Michigan State University, East Lansing, MI 48824-1027 USA; e-mail: jhall@math.msu.edu

Lie algebras and quantized enveloping algebras, Gail R. Letzter; e-mail: letzter.pams@verizon.net

Logic and foundations, Julia Knight, University of Notre Dame, 255 Hurley, Notre Dame, IN 46556-4618 USA; e-mail: knight.1@nd.edu

Noncommutative algebra, Birge Huisgen-Zimmerman, University of California, Santa Barbara, Santa Barbara, CA 93106-3080 USA; e-mail: bhz.pams@math.ucsb.edu

Number theory, Ken Ono, University of Wisconsin, Madison, WI 53706 USA; e-mail: ono@math.wisc.edu

5. APPLIED MATHEMATICS, PROBABILITY, AND STATISTICS

Coordinating Editor: Peter A. Clarkson, Institute of Mathematics, Statistics and Actuarial Science, University of Kent, Canterbury, CT2 7NF, United Kingdom; e-mail: P.A.Clarkson@kent.ac.uk

Applied probability and statistics, Edward C. Waymire, Oregon State University, Corvallis, OR 97331-4605 USA; e-mail: waymire@math.orst.edu

Differential equations, Michael I. Weinstein, Department of Applied Physics and Applied Mathematics, Columbia University, 200 S.W. Mudd MC 4701, New York, NY 10027 USA; e-mail: miw2103@columbia.edu

Integrable systems and special functions, Peter A. Clarkson

Partial differential equations and dynamical systems, Walter Craig, Department of Mathematics and Statistics, McMaster University, Hamilton, Ontario, L8S 4K1 Canada; e-mail: craig@math.mcmaster.ca

Probability, Richard C. Bradley, Indiana University, Bloomington, IN 47405-4301 USA; e-mail: bradleyr@indiana.edu

(Continued from back cover)

David Damanik and Gerald Teschl , Bound states of discrete Schrödinger operators with super-critical inverse square potentials	1123
Hans Volkmer and Anton Zettl , Inverse spectral theory for Sturm-Liouville problems with finite spectrum	1129
Kenneth S. Berenhaut, John D. Foley, and Stevo Stević , The global attractivity of the rational difference equation $y_n = 1 + \frac{y_{n-k}}{y_{n-m}}$	1133
Jorge Mujica and Paula Takatsuka , A Schottky-type theorem for starlike domains in Banach spaces	1141
Henrik Petersson , Hypercyclicity in omega	1145
Belmesnaoui Aqzzouz, Redouane Nouira, and Larbi Zraoula , Compactness properties of operators dominated by AM-compact operators	1151
V. Indumathi and S. Lalithambigai , A new proof of proximality for M -ideals	1159
L. A. Coburn , Sharp Berezin Lipschitz estimates	1163
S. Rohde , Dimension distortion of hyperbolically convex maps	1169
Ioana Serban and Flavius Turcu , Compact perturbations of isometries	1175
Alexander Yu. Solynin , Hyperbolic convexity and the analytic fixed point function	1181

C. APPLIED MATHEMATICS

Jinqiao Duan and Balasubramanya T. Nadiga , Stochastic parameterization for large eddy simulation of geophysical flows	1187
---	------

E. LOGIC AND FOUNDATIONS

Albin L. Jones , More on partitioning triples of countable ordinals	1197
Kyriakos Keremedis and Eleftherios Tachtsis , Countable compact Hausdorff spaces need not be metrizable in ZF	1205
David Schritterser , Lightface Σ_2^1 -indescribable cardinals	1213

F. STATISTICS AND PROBABILITY

István Berkes and Michel Weber , A law of the iterated logarithm for arithmetic functions	1223
--	------

G. TOPOLOGY

Mohsen Pourahmadi, Akihiko Inoue, and Yukio Kasahara , A prediction problem in $L^2(w)$	1233
--	------

PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY
CONTENTS

Vol. 135, No. 4

Whole No. 574

April 2007

A. ALGEBRA, NUMBER THEORY, AND COMBINATORICS

Guangxing Zeng , Henselian valuations and orderings of a commutative ring ...	929
Christos A. Athanasiadis, Thomas Brady, and Colum Watt , Shellability of noncrossing partition lattices	939
Yves de Cornulier , Finitely presentable, non-Hopfian groups with Kazhdan's Property (T) and infinite outer automorphism group	951
Walter Ferrer Santos and Alvaro Rittatore , Generalizations of Cayley's Ω -process	961
Stéphane R. Louboutin, Joël Rivat, and András Sárközy , On a problem of D. H. Lehmer	969
Jor-Ting Chan, Chi-Kwong Li, and Nung-Sing Sze , Mappings preserving spectra of products of matrices	977
Uğur Madran , Lower degree bounds for modular vector invariants	987
Winfried Kohnen , Sign changes of Hecke eigenvalues of Siegel cusp forms of genus two	997
Masataka Chida and Masanobu Kaneko , On ordinary primes for modular forms and the theta operator	1001

B. ANALYSIS

Radu Balan, Peter G. Casazza, Dan Edidin, and Gitta Kutyniok , A new identity for Parseval frames	1007
Mei Zhang and Changjiang Zhu , Global existence of solutions to a hyperbolic-parabolic system	1017
Nicolas Burq, Andrew Hassell, and Jared Wunsch , Spreading of quasimodes in the Bunimovich stadium	1029
A. G. Aksoy and B. L. Chalmers , Minimal numerical-radius extensions of operators	1039
Shu-wen Xiang , Equivalence of completeness and contraction property	1051
Birol Altin , On Banach lattices with Levi norms	1059
Alexander J. Izzo , Algebras generated by the disc algebra and bounded harmonic functions	1065
Xavier Buff and Arnaud Chéritat , How regular can the boundary of a quadratic Siegel disk be?	1073
Eve Oja and Märt Põldvere , Principle of local reflexivity revisited	1081
L. Birbrair, J. C. F. Costa, A. Fernandes, and M. A. S. Ruas , \mathcal{K} -bi-Lipschitz equivalence of real function-germs	1089
Yuan-Chuan Li and Sen-Yen Shaw , On characterization and perturbation of local C -semigroups	1097
Bassam Shayya , An affine restriction estimate in \mathbb{R}^3	1107
Z. Ditzian and A. V. Prymak , Sharp Marchaud and converse inequalities in Orlicz spaces	1115

(Continued on inside back cover)



0002-9939(200704)135:4;1-M