PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY

CONTENTS

Vol. 141, No. 6 Whole No. 648 June 2013

A. ALGEBRA, NUMBER THEORY, AND COMBINATORICS

Delia Garijo, Andrew Goodall, and Jaroslav Nešetřil, Contractors for flows 1849
Olivier Haution, Degree formula for the Euler characteristic 1863
Jenny G. Fuselier, Traces of Hecke operators in level 1 and Gaussian hypergeometric functions 1871
Adam McCabe and Gregory G. Smith, Log-concavity of asymptotic multigraded Hilbert series 1883
David A. Towers, Complements of intervals and prefattini subalgebras of solvable Lie algebras 1893
Michael Dewar and M. Ram Murty, A derivation of the Hardy-Ramanujan formula from an arithmetic formula 1903
Cleon S. Barroso, Geraldo Botelho, Vinícius V. Fávaro, and Daniel Pellegrino, Lineability and spaceability for the weak form of Peano's theorem and vector-valued sequence spaces 1913
Kyouko Kimura and Naoki Terai, Binomial arithmetical rank of edge ideals of forests 1925
Jonathan Skowera, Bialynicki-Birula decomposition of Deligne-Mumford stacks 1933
Claude Cibils, Maria Julia Redondo, and Andrea Solotar, Full and convex linear subcategories are incompressible 1939
James A. Carlson and Domingo Toledo, Cubic surfaces with special periods 1947
Mihály Weiner, A gap for the maximum number of mutually unbiased bases 1963
Hoang Le Truong, Index of reducibility of distinguished parameter ideals and sequentially Cohen-Macaulay modules 1971

B. ANALYSIS

Raphaël Danchin, Remarks on the lifespan of the solutions to some models of incompressible fluid mechanics 1979
M. Zuhair Nashed, Qiyu Sun, and Jun Xian, Convolution sampling and reconstruction of signals in a reproducing kernel subspace 1995
S. Waleed Noor and Dan Timotin, Embeddings of Müntz spaces: The Hilbertian case 2009
Szymon Głąb, Pedro L. Kaufmann, and Leonardo Pellegrini, Spaceability and algebrability of sets of nowhere integrable functions 2025
Pietro Aiena and Michael M. Neumann, On the stability of the localized single-valued extension property under commuting perturbations 2039
Laura Castaño–García and Juan J. Moreno–Balcázar, Zeros of varying Laguerre–Krall orthogonal polynomials 2051
Hiroki Kodama and Shigenori Matsumoto, Minimal $C^1$-diffeomorphisms of the circle which admit measurable fundamental domains 2061
Judit Makó and Zsolt Páles, On approximately convex Takagi type functions 2069
Richard Oberlin, A Marcinkiewicz maximal-multiplier theorem 2081
Johann S. Brauchart and Josef Dick, A simple proof of Stolarsky's invariance principle 2085
Ryan Hamilton, Pick interpolation in several variables 2097
Dan-Andrei Geba and Daniel da Silva, On the regularity of the 2 + 1 dimensional equivariant Skyrme model 2105
Qun Li, Damin Wu, and Fangyang Zheng, An example of compact Kähler manifold with nonnegative quadratic bisectional curvature 2117
D. GEOMETRY

Valerio Capraro and Tobias Fritz, On the axiomatization of convex subsets of Banach spaces ................................................................. 2127

A. Meziani, Nonrigidity of a class of two dimensional surfaces with positive curvature and planar points ........................................... 2137

Manuel Fernández-López and Eduardo García-Río, A sharp lower bound for the scalar curvature of certain steady gradient Ricci solitons .............. 2145

F. STATISTICS AND PROBABILITY

Ian Pierce and David Skoug, Comparing the distribution of various suprema on two-parameter Wiener space ........................................ 2149

G. TOPOLOGY

Urtzi Buijs and Samuel B. Smith, Rational homotopy type of the classifying space for fibrewise self-equivalences ................................ 2153

Fedor Sukochev, Alexandr Usachev, and Dmitriy Zanin, On the distinction between the classes of Dixmier and Connes-Dixmier traces ............. 2169

Saurabh Trivedi, Transversality theorems for the weak topology ................ 2181

Tim D. Cochran, Bridget D. Franklin, Matthew Hedden, and Peter D. Horn, Knot concordance and homology cobordism ......................... 2193

Stavros Garoufalidis, Hugh Morton, and Thao Vuong, The SL_3 colored Jones polynomial of the trefoil ................................................. 2209

ERRATA

Debora Impera, Luciano Mari, and Marco Rigoli, Erratum to “Some geometric properties of hypersurfaces with constant r-mean curvature in Euclidean space” ................................................................. 2221
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 15 published pages. Published pages are the same size as those generated in the style files provided for \texttt{AMS-L\LaTeX} or \texttt{AMS-\LaTeX}.

Information on the backlog for this journal can be found on the AMS website starting from \url{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 is required before we can begin processing your paper. After a paper is accepted for publication, the Providence office will send a Consent to Publish 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 \url{www.ams.org/submission/proc}, 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 2010 Mathematics Subject Classification representing the primary and secondary subjects of the article. The classifications are accessible from \url{www.ams.org/msc/}. 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 \url{www.ams.org/msnhtml/serials.pdf}. To help in preparing and verifying references, the AMS offers MR Lookup, a Reference Tool for Linking, at \url{www.ams.org/mrlookup/}.

Electronically prepared manuscripts. The AMS encourages electronically prepared manuscripts, with a strong preference for \texttt{AMS-L\LaTeX}. To this end, the Society has prepared \texttt{AMS-L\LaTeX} 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 \texttt{AMS-L\LaTeX} style file and the \texttt{\ label} and \texttt{\ 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 \LaTeX, using \texttt{AMS-L\LaTeX} 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. \texttt{AMS-L\LaTeX} papers also move more efficiently through the production stream, helping to minimize publishing costs.
AMS-LATEX is the highly preferred format of T\LaTeX, but author packages are also available in AMS-\LaTeX. 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 E\LaTeX or plain \LaTeX 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. E\LaTeX users will find that AMS-LATEX is the same as E\LaTeX with additional commands to simplify the typesetting of mathematics, and users of plain \LaTeX should have the foundation for learning AMS-LATEX.

Authors may retrieve an author package for Proceedings of the AMS from www.ams.org/proc/procauthorpac.html or via FTP to ftp.ams.org (login as anonymous, enter your complete email address as password, and type cd pub/author-info). The AMS Author Handbook and the Instruction Manual are available in PDF format from the author package link. The author package can also be obtained free of charge by sending email to tech-support@ams.org or from the Publication Division, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA. When requesting an author package, please specify AMS-LATEX or AMS-\LaTeX and the publication in which your paper will appear. Please be sure to include your complete email address.

After acceptance. The source files for 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 submit a PDF of 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, or sent on CD to the Electronic Prepress Department, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA. When sending a manuscript electronically via email or CD, 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/authors/journals.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.

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. 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/. 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.

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/procsendate.html.

Managing Editor: Ken Ono, Emory University, Atlanta, GA 30322 USA; and University of Wisconsin, Madison, WI 53706 USA; e-mail: ono@mathcs.emory.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

Ergodic theory and dynamical systems, Nimish Shah, Ohio State University, Columbus, OH 43210 USA; e-mail: shah@math.ohio-state.edu

Global analysis, noncommutative geometry, and the mathematics of string theory, Varghese Mathai, School of Mathematical Sciences, The University of Adelaide, SA 5005, Australia; e-mail: mathai.varghese@adelaide.edu.au

Ordinary differential equations and dynamical systems, Yingfei Yi, School of Mathematics, Georgia Institute of Technology, Atlanta, GA 30332-0001 USA; e-mail: yi@math.gatech.edu

Partial differential equations, Joachim Krieger, École Polytechnique Fédérale de Lausanne Bâtiment des Mathématiques Station 8, CH-1015 Lausanne, Switzerland; e-mail: joachim.krieger@epfl.ch

2. TOPOLOGY AND GEOMETRY
Coordinating Editor: Daniel Ruberman, Brandeis University, Waltham, MA 02254-9110 USA; e-mail: ruberman@brandeis.edu

Algebraic topology, Michael A. Mandell, Indiana University Bloomington, 831 E. Third Street, Bloomington, IN 47405 USA; e-mail: mmandell@indiana.edu

Differential geometry, Lei Ni, University of California, San Diego, La Jolla, CA 92093 USA; e-mail: lni@math.ucsd.edu; lni.math.ucsd@gmail.com

Geometric analysis, Michael Wolf, Rice University, Mailstop 136, Houston, TX 77005-1892 USA; e-mail: mwolf@rice.edu

Geometric topology, Kevin Whyte, University of Illinois at Chicago, 851 S. Morgan Street, Chicago, IL 60607-7045 USA; e-mail: kwhyte@math.uic.edu

Low dimensional topology, gauge theory, 4-manifolds, Daniel Ruberman

3. ANALYSIS
Coordinating Editor: Mei-Chi Shaw, University of Notre Dame, Notre Dame, IN 46556-0398 USA; e-mail: mei-chi.shaw.1@nd.edu

Banach spaces and linear functional analysis, Thomas Schlumprecht, Texas A&M University, 3368 TAMU, College Station, TX 77843-3368 USA; e-mail: schlump@math.tamu.edu

Geometric function theory, Jeremy Tyson, University of Illinois, 1409 W. Green Street, Urbana, IL 61801 USA; e-mail: tyson@math.uiuc.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, Alexander Iosevich, University of Rochester, Rochester, NY 14627 USA; e-mail: iosevich@math.rochester.edu

Microlocal analysis and spectral theory, Michael Hitrik, University of California, Los Angeles, Los Angeles, CA 90095-1555 USA; e-mail: hitrik@math.ucla.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

Operator theory and spaces of holomorphic functions, Pamela B. Gorkin, Bucknell University, Lewisburg, PA 17837 USA; e-mail: pgorkin@bucknell.edu

Several complex variables, Franc Forstneric, University of Ljubljana, Jadranska 19, 1000 Ljubljana, Slovenia; e-mail: franc.forstneric@fmf.uni-lj.si

4. ALGEBRA, NUMBER THEORY, COMBINATORICS, AND LOGIC

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

Algebraic and arithmetic geometry, Lev Borisov, Rutgers University, Piscataway, NJ 08854 USA; e-mail: borisov@math.rutgers.edu

Automorphic and modular forms, Kathrin Bringmann, Mathematisches Institut der Universit¨at zu Koeln, Weyertal 86-90, D-50931 Koeln, Germany; e-mail: kbringma@math.uni-koeln.de

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

Commutative algebra, Irena Peeva, Cornell University, Ithaca, NY 14853 USA; e-mail: irena@math.cornell.edu

Logic and foundations, M i r n a D ˇzamonja, School of Mathematics, University of East Anglia, Norwich NR4 7TJ, United Kingdom; e-mail: h020@uea.ac.uk

Noncommutative algebra and invariant theory, Harm Derksen, University of Michigan, 530 Church Street, Ann Arbor, MI 48109-1043 USA; e-mail: hderksen@umich.edu

Number theory, Matthew A. Papanikolas, Texas A&M University, 3368 TAMU, College Station, TX 77843-3368 USA; e-mail: map@math.tamu.edu

5. APPLIED MATHEMATICS, PROBABILITY, AND STATISTICS

Coordinating Editor: Walter Craig, McMaster University, Hamilton, Ontario, L8S 4K1 Canada; e-mail: craig@math.mcmaster.ca

Applied probability and statistics, David Levin, University of Oregon, Eugene, OR 97403-1221 USA; e-mail: dlevin@uoregon.edu

Integrable systems and special functions, Sergei K. Suslov, School of Mathematical and Statistical Sciences, Arizona State University, Tempe, AZ 85287-1807 USA; e-mail: suslov@math.asu.edu

Partial differential equations and dynamical systems, Walter Craig

Probability, Mark M. Meerschaert, Department of Probability and Statistics, Michigan State University, East Lansing, MI 48823 USA; e-mail: mcubed@stt.msu.edu

Special functions and approximation theory, Walter Van Assche, Katholieke Universiteit Leuven, Celestijnenlaan 200B, Box 2400, BE-3001 Leuven, Belgium; e-mail: walter.vanassche@wis.kuleuven.be
(Continued from back cover)

Richard Oberlin, A Marcinkiewicz maximal-multiplier theorem .................... 2081
Johann S. Brauchart and Josef Dick, A simple proof of Stolarsky’s invariance principle ................................................................. 2085
Ryan Hamilton, Pick interpolation in several variables .............................. 2097
Dan-Andrei Geba and Daniel da Silva, On the regularity of the 2 + 1 dimensional equivariant Skyrme model ............................................ 2105
Qun Li, Damin Wu, and Fangyang Zheng, An example of compact Kähler manifold with nonnegative quadratic bisectional curvature .............. 2117

D. GEOMETRY

Valerio Capraro and Tobias Fritz, On the axiomatization of convex subsets of Banach spaces ................................................................. 2127
A. Meziani, Nonrigidity of a class of two dimensional surfaces with positive curvature and planar points ................................................. 2137
Manuel Fernández-López and Eduardo García-Río, A sharp lower bound for the scalar curvature of certain steady gradient Ricci solitons .............. 2145

F. STATISTICS AND PROBABILITY

Ian Pierce and David Skoug, Comparing the distribution of various suprema on two-parameter Wiener space .............................................. 2149

G. TOPOLOGY

Urtzi Buijs and Samuel B. Smith, Rational homotopy type of the classifying space for fibrewise self-equivalences ....................................... 2153
Fedor Sukochev, Alexandr Usachev, and Dmitriy Zanin, On the distinction between the classes of Dixmier and Connes-Dixmier traces ............... 2169
Saurabh Trivedi, Transversality theorems for the weak topology ................. 2181
Tim D. Cochran, Bridget D. Franklin, Matthew Hedden, and Peter D. Horn, Knot concordance and homology cobordism .................................. 2193
Stavros Garoufalidis, Hugh Morton, and Thao Vuong, The $SL_3$ colored Jones polynomial of the trefoil .............................................. 2209

ERRATA

Debora Impera, Luciano Mari, and Marco Rigoli, Erratum to “Some geometric properties of hypersurfaces with constant $r$-mean curvature in Euclidean space” ...................................................... 2221
A. ALGEBRA, NUMBER THEORY, AND COMBINATORICS

Delia Garijo, Andrew Goodall, and Jaroslav Nešetřil, Contractors for flows 1849
Olivier Haution, Degree formula for the Euler characteristic 1863
Jenny G. Fuselier, Traces of Hecke operators in level 1 and Gaussian hypergeometric functions 1871
Adam McCabe and Gregory G. Smith, Log-concavity of asymptotic multigraded Hilbert series 1883
David A. Towers, Complements of intervals and prefrattini subalgebras of solvable Lie algebras 1893
Michael Dewar and M. Ram Murty, A derivation of the Hardy-Ramanujan formula from an arithmetic formula 1903
Cleon S. Barroso, Geraldo Botelho, Vinicius V. Fávaro, and Daniel Pellegrino, Lineability and spaceability for the weak form of Peano’s theorem and vector-valued sequence spaces 1913
Kyouko Kimura and Naoki Terai, Binomial arithmetical rank of edge ideals of forests 1925
Jonathan Skowera, Białynicki-Birula decomposition of Deligne-Mumford stacks 1933
Claude Cibils, Maria Julia Redondo, and Andrea Solotar, Full and convex linear subcategories are incompressible 1939
James A. Carlson and Domingo Toledo, Cubic surfaces with special periods 1947
Mihály Weiner, A gap for the maximum number of mutually unbiased bases 1963
Hoang Le Truong, Index of reducibility of distinguished parameter ideals and sequentially Cohen-Macaulay modules 1971

B. ANALYSIS

Raphaël Danchin, Remarks on the lifespan of the solutions to some models of incompressible fluid mechanics 1979
M. Zuhair Nashed, Qiyu Sun, and Jun Xian, Convolution sampling and reconstruction of signals in a reproducing kernel subspace 1995
S. Waleed Noor and Dan Timotin, Embeddings of Münz spaces: The Hilbertian case 2009
Szymon Glab, Pedro L. Kaufmann, and Leonardo Pellegrini, Spaceability and algebrability of sets of nowhere integrable functions 2025
Pietro Aiena and Michael M. Neumann, On the stability of the localized single-valued extension property under commuting perturbations 2039
Laura Castaño–García and Juan J. Moreno–Balcázar, Zeros of varying Laguerre–Krall orthogonal polynomials 2051
Hiroki Kodama and Shigenori Matsumoto, Minimal $C^1$-diffeomorphisms of the circle which admit measurable fundamental domains 2061
Judit Makó and Zsolt Páles, On approximately convex Takagi type functions (Continued on inside back cover)