
VOLUME 144 NUMBER 3



MARCH 2016

WHOLE NUMBER 681

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

Lev Borisov
Alexander Braverman
Kathrin Bringmann
Ken Bromberg
Mirna Džamonja
Franc Forstneric
David Futer
Stephan Ramon Garcia
Patricia L. Hersh
Michael Hitrik
Adrian Ioana
Alexander Iosevich
Joachim Krieger
David Levin
Michael A. Mandell
Svitlana Mayboroda
Mark M. Meerschaert
Kailash C. Misra

Lei Ni
Ken Ono, Managing Editor
Matthew A. Papanikolas
Irena Peeva
Thomas Schlumprecht
Nimish Shah
Romyar T. Sharifi
Mei-Chi Shaw
Catherine Sulem
Sergei K. Suslov
Pham Huu Tiep
Jeremy Tyson
Walter Van Assche
Guofang Wei
Jerzy Weyman
Michael Wolf
Yingfei Yi

PROVIDENCE, RHODE ISLAND USA

ISSN 0002-9939 (print)

ISSN 1088-6826 (online)

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.

Publication on the AMS website. Articles are published on 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 and is also accessible electronically from www.ams.org/journals/. Subscription prices for Volume 144 (2016) are as follows: for paper delivery, US\$1542.00 list, US\$1233.60 institutional member, US\$1387.80 corporate member, US\$925.20 individual member; for electronic delivery, US\$1356.00 list, US\$1084.80 institutional member, US\$1220.40 corporate member, US\$813.60 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\$5 for delivery within the United States; US\$52 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/backvols.

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. Individual readers of this publication, and nonprofit libraries acting for them, are permitted to make fair use of the material, such as to copy an article for use in teaching or research. Permission is granted to quote brief passages from this publication in reviews, provided the customary acknowledgment of the source is given.

Republication, systematic copying, or multiple reproduction of any material in this publication is permitted only under license from the American Mathematical Society. Permissions to reuse portions of AMS publication content are handled by Copyright Clearance Center's RightsLink® service. For more information, please visit <http://www.ams.org/rightslink>.

Translation rights and licensed reprint requests should be sent to reprint-permission@ams.org.

Excluded from these provisions is material for which the author holds copyright. In such cases, requests for permission to reuse or reprint material 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 (ISSN 0002-9939 (print); ISSN 1088-6826 (online)) 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.

© 2016 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*™, *CompuMath Citation Index*®, and *Current Contents*®/Physical, Chemical & Earth Sciences. This journal is archived in *Portico* and in *CLOCKSS*.

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 21 20 19 18 17 16

PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY
CONTENTS

Vol. 144, No. 3

Whole No. 681

March 2016

A. ALGEBRA, NUMBER THEORY, AND COMBINATORICS

Neil Epstein and Jay Shapiro, A Dedekind-Mertens theorem for power series rings	917
Julio Brau and Nathan Jones, Elliptic curves with 2-torsion contained in the 3-torsion field	925
Jean Michel, Deligne-Lusztig theoretic derivation for Weyl groups of the number of reflection factorizations of a Coxeter element	937
Antonio Giambruno and Sergey Mishchenko, Degrees of irreducible characters of the symmetric group and exponential growth	943
Mordechai Katzman, Gennady Lyubeznik, and Wenliang Zhang, An extension of a theorem of Hartshorne	955
Marcin Chałupnik, Poincaré duality for Ext-groups between strict polynomial functors	963
Nan Gao and Steffen Koenig, Double centraliser property and morphism categories	971
L. Birbrair, A. Fernandes, D. T. Lê, and J. E. Sampaio, Lipschitz regular complex algebraic sets are smooth	983
Alice L. L. Gao and Arthur L. B. Yang, A bijective proof of the hook-length formula for standard immaculate tableaux	989
Chao-Ping Dong, Spin norm, pencils, and the u-small convex hull	999
Lars Winther Christensen and Fatih Köksal, Injective modules under faithfully flat ring extensions	1015

B. ANALYSIS

Azita Mayeli, A unified approach for Littlewood-Paley decomposition of abstract Besov spaces	1021
S. Denisov, On the size of the polynomials orthonormal on the unit circle with respect to a measure which is a sum of the Lebesgue measure and P point masses	1029
Feng Dai, Han Feng, and Sergey Tikhonov, Reverse Hölder's inequality for spherical harmonics	1041
P. J. Ayre, M. G. Cowling, and F. A. Sukochev, Operator Lipschitz estimates in the unitary setting	1053
Guo Lin and Shigui Ruan, Persistence and failure of complete spreading in delayed reaction-diffusion equations	1059
Lian Wu, Multipliers for noncommutative Walsh-Fourier series	1073
Malik Younsi, Shapes, fingerprints and rational lemniscates	1087
José Ángel Peláez, Compact embedding derivatives of Hardy spaces into Lebesgue spaces	1095
Stephen J. Gardiner and Myrto Manolaki, A convergence theorem for harmonic measures with applications to Taylor series	1109
Yun Yang, Livšić measurable rigidity for C^1 generic volume-preserving Anosov systems	1119
A. Sri Ranga, Orthogonal polynomials with respect to a family of Sobolev inner products on the unit circle	1129
Hyun-Kyoung Kwon, Anupan Netyanun, and Tavan T. Trent, An analytic approach to the degree bound in the Nullstellensatz	1145

King-Yeung Lam and Daniel Munther, A remark on the global dynamics of competitive systems on ordered Banach spaces	1153
Naoya Sumi, Paulo Varandas, and Kenichiro Yamamoto, Partial hyperbolicity and specification	1161
Michał Strzelecki, A note on sharp one-sided bounds for the Hilbert transform	1171
Shilei Fan and Lingmin Liao, Dynamics of the square mapping on the ring of p-adic integers	1183
G. Karreskog, P. Kurasov, and I. Trygg Kupersmidt, Schrödinger operators on graphs: Symmetrization and Eulerian cycles	1197
Leobardo Rosales, A Hölder estimate for entire solutions to the two-valued minimal surface equation	1209
Hrant Hakobyan and Dragomir Šarić, Vertical limits of graph domains	1223
J. Iglesias, C. Lizana, and A. Portela, Robust transitivity for endomorphisms admitting critical points	1235
Xinfu Chen and Xiang Xu, Existence and uniqueness of global classical solutions of a gradient flow of the Landau-de Gennes energy	1251
Sungwhan Kim and Alexandru Tamasan, A Calderón problem with frequency-differential data in dispersive media	1265
Jean-Baptiste Aujogue, Optimal embedding of Meyer sets into model sets	1277

D. GEOMETRY

Shigenori Matsumoto, Weak form of equidistribution theorem for harmonic measures of foliations by hyperbolic surfaces	1289
Shuzo Izumi, Sufficiency of simplex inequalities	1299
Patrick Iglesias-Zemmour, Example of singular reduction in symplectic diffeology	1309
Keita Kunikawa, A Bernstein type theorem of ancient solutions to the mean curvature flow	1325

F. STATISTICS AND PROBABILITY

Arijit Chakrabarty and Rajat Subhra Hazra, Remarks on absolute continuity in the context of free probability and random matrices	1335
--	------

G. TOPOLOGY

Ingrid Beltiță and Daniel Beltiță, Coadjoint orbits of stepwise square integrable representations	1343
Ricardo García López, On a twisted Reidemeister torsion	1351
Reinhard Schultz, Isovariant homotopy equivalences of manifolds with group actions	1363
J. Scott Carter and Seung Yeop Yang, Twist spinning knotted trivalent graphs	1371

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 $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$.

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 electronically published on 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. All articles submitted to this journal are peer reviewed. The AMS has a single blind peer-review process in which the reviewers know who the authors of the manuscript are, but the authors do not have access to the information on who the peer reviewers are. 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/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 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 www.ams.org/msnhtml/serials.pdf. 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. Manuscripts should be electronically prepared in $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$. To this end, the Society has prepared $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$ 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 $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$ 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.

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](ftp://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 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. 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%.

Any graphics created in color will be rendered in grayscale for the printed version unless color printing is authorized by the Managing Editor and the Publisher. In general, color graphics will appear in color in the online version.

AMS policy on making changes to articles after publication. Articles are published on 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 published to the AMS website, changes cannot be made in place in 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 electronically published.

Corrections of critical errors may be made to the paper by submitting an errata article to the Editor. The errata article will be published electronically, will appear in a future print issue, and will link back and forth on the Web with the original article.

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/procsubmit.html.

Managing Editor: Ken Ono, Emory University, Atlanta, GA 30322 USA; e-mail: ono@mathcs.emory.edu

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

Coordinating Editor: Nimish Shah, The Ohio State University, Columbus, OH 43210 USA; e-mail: shah@math.osu.edu

Ergodic theory and dynamical systems, Nimish Shah

Global analysis, Guofang Wei, University of California, Santa Barbara, Santa Barbara, CA 93106-3080 USA; e-mail: wei@math.ucsb.edu

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

Representation theory and algebraic geometry, Alexander Braverman, University of Toronto, Toronto, ON, Canada; and Perimeter Institute, Waterloo, ON, Canada; e-mail: braval@math.toronto.edu

2. TOPOLOGY AND GEOMETRY

Coordinating Editor: Michael Wolf, Rice University, Houston, TX 77005-1892 USA; e-mail: mwolf@rice.edu

Algebraic topology, Michael A. Mandell, Indiana University Bloomington, 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: lني@math.ucsd.edu; lني.math.ucsd@gmail.com

Geometric analysis, Michael Wolf

Geometric topology, Ken Bromberg, University of Utah, Salt Lake City, UT 84112, USA; e-mail: bromberg@math.utah.edu

Geometric topology and knot theory, David Futer, Temple University, Philadelphia, PA 19122, USA; e-mail: dfuter@temple.edu

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, College Station, TX 77843-3368 USA; e-mail: schlump@math.tamu.edu

Geometric function theory, Jeremy Tyson, University of Illinois, Urbana, IL 61801 USA; e-mail: tyson@math.uiuc.edu

Harmonic analysis, Alexander Iosevich, University of Rochester, Rochester, NY 14627 USA; e-mail: iosevich@math.rochester.edu

Harmonic analysis and linear partial differential equations; geometric measure theory and its applications, Svitlana Mayboroda, Department of Mathematics, University of Minnesota, Minneapolis, MN 55455 USA; e-mail: svitlana@math.umn.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, Adrian Ioana, Department of Mathematics, University of California, San Diego, La Jolla, CA 92093 USA; e-mail: aioana@math.ucsd.edu

Operator theory and spaces of holomorphic functions, Stephan Ramon Garcia, Pomona College, Claremont, CA 91711 USA; e-mail: stephan.garcia@pomona.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: Pham Huu Tiep, University of Arizona, Tucson, AZ 85721-0089 USA; e-mail: tiep@math.arizona.edu

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

Algebraic number theory and arithmetic geometry, Romyar T. Sharifi, University of Arizona, Tucson, AZ 85721-0089 USA; e-mail: sharifi@math.arizona.edu

Automorphic and modular forms, Kathrin Bringmann, Mathematisches Institut der Universität zu Koeln, D-50931 Koeln, Germany; e-mail: kbringma@math.uni-koeln.de

Combinatorics, Patricia L. Hersh, North Carolina State University, Raleigh, NC, 27695-8205 USA; e-mail: plhersh@ncsu.edu

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

Commutative algebra, noncommutative algebra and invariant theory, Jerzy Weyman, University of Connecticut, Storrs, CT, 06269 USA; e-mail: jerzy.weyman@uconn.edu

Group theory, Pham Huu Tiep

Lie algebras and quantized enveloping algebras, Kailash C. Misra, North Carolina State University, Raleigh, NC, 27695-8205, USA; e-mail: misra@math.ncsu.edu

Logic and foundations, Mirna Džamonja, School of Mathematics, University of East Anglia, Norwich, United Kingdom; e-mail: h020@uea.ac.uk

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

5. APPLIED MATHEMATICS, PROBABILITY, AND STATISTICS

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

Applied probability and statistics, David Levin, University of Oregon, Eugene, OR, 97043-1221 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.la.asu.edu

Nonlinear partial differential equations, Catherine Sulem, University of Toronto, 40 St. George Street, Bahen Center, Toronto, ON, Canada; e-mail: sulem@math.toronto.edu

Probability, Mark M. Meerschaert

Special functions and approximation theory, Walter Van Assche, Katholieke Universiteit Leuven, Celestijnenlaan 200B, Leuven, Belgium; e-mail: walter.vanassche@wis.kuleuven.be

(Continued from back cover)

Yun Yang , Livšic measurable rigidity for C^1 generic volume-preserving Anosov systems	1119
A. Sri Ranga , Orthogonal polynomials with respect to a family of Sobolev inner products on the unit circle	1129
Hyun-Kyoung Kwon , Anupan Netyanun , and Tavan T. Trent , An analytic approach to the degree bound in the Nullstellensatz	1145
King-Yeung Lam and Daniel Munther , A remark on the global dynamics of competitive systems on ordered Banach spaces	1153
Naoya Sumi , Paulo Varandas , and Kenichiro Yamamoto , Partial hyperbolicity and specification	1161
Michał Strzelecki , A note on sharp one-sided bounds for the Hilbert transform	1171
Shilei Fan and Lingmin Liao , Dynamics of the square mapping on the ring of p-adic integers	1183
G. Karreskog , P. Kurasov , and I. Trygg Kupersmidt , Schrödinger operators on graphs: Symmetrization and Eulerian cycles	1197
Leobardo Rosales , A Hölder estimate for entire solutions to the two-valued minimal surface equation	1209
Hrant Hakobyan and Dragomir Šarić , Vertical limits of graph domains	1223
J. Iglesias , C. Lizana , and A. Portela , Robust transitivity for endomorphisms admitting critical points	1235
Xinfu Chen and Xiang Xu , Existence and uniqueness of global classical solutions of a gradient flow of the Landau-de Gennes energy	1251
Sungwhan Kim and Alexandru Tamasan , A Calderón problem with frequency-differential data in dispersive media	1265
Jean-Baptiste Aujogue , Optimal embedding of Meyer sets into model sets	1277

D. GEOMETRY

Shigenori Matsumoto , Weak form of equidistribution theorem for harmonic measures of foliations by hyperbolic surfaces	1289
Shuzo Izumi , Sufficiency of simplex inequalities	1299
Patrick Iglesias-Zemmour , Example of singular reduction in symplectic diffeology	1309
Keita Kunikawa , A Bernstein type theorem of ancient solutions to the mean curvature flow	1325

F. STATISTICS AND PROBABILITY

Arijit Chakrabarty and Rajat Subhra Hazra , Remarks on absolute continuity in the context of free probability and random matrices	1335
---	------

G. TOPOLOGY

Ingrid Beltiță and Daniel Beltiță , Coadjoint orbits of stepwise square integrable representations	1343
Ricardo García López , On a twisted Reidemeister torsion	1351
Reinhard Schultz , Isovariant homotopy equivalences of manifolds with group actions	1363
J. Scott Carter and Seung Yeop Yang , Twist spinning knotted trivalent graphs	1371

PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY

CONTENTS

Vol. 144, No. 3 Whole No. 681 March 2016

A. ALGEBRA, NUMBER THEORY, AND COMBINATORICS

Neil Epstein and Jay Shapiro, A Dedekind-Mertens theorem for power series rings	917
Julio Brau and Nathan Jones, Elliptic curves with 2-torsion contained in the 3-torsion field	925
Jean Michel, Deligne-Lusztig theoretic derivation for Weyl groups of the number of reflection factorizations of a Coxeter element	937
Antonio Giambruno and Sergey Mishchenko, Degrees of irreducible characters of the symmetric group and exponential growth	943
Mordechai Katzman, Gennady Lyubeznik, and Wenliang Zhang, An extension of a theorem of Hartshorne	955
Marcin Chałupnik, Poincaré duality for Ext-groups between strict polynomial functors	963
Nan Gao and Steffen Koenig, Double centraliser property and morphism categories	971
L. Birbrair, A. Fernandes, D. T. Lê, and J. E. Sampaio, Lipschitz regular complex algebraic sets are smooth	983
Alice L. L. Gao and Arthur L. B. Yang, A bijective proof of the hook-length formula for standard immaculate tableaux	989
Chao-Ping Dong, Spin norm, pencils, and the u-small convex hull	999
Lars Winther Christensen and Fatih Köksal, Injective modules under faithfully flat ring extensions	1015

B. ANALYSIS

Azita Mayeli, A unified approach for Littlewood-Paley decomposition of abstract Besov spaces	1021
S. Denisov, On the size of the polynomials orthonormal on the unit circle with respect to a measure which is a sum of the Lebesgue measure and P point masses	1029
Feng Dai, Han Feng, and Sergey Tikhonov, Reverse Hölder's inequality for spherical harmonics	1041
P. J. Ayre, M. G. Cowling, and F. A. Sukochev, Operator Lipschitz estimates in the unitary setting	1053
Guo Lin and Shigui Ruan, Persistence and failure of complete spreading in delayed reaction-diffusion equations	1059
Lian Wu, Multipliers for noncommutative Walsh-Fourier series	1073
Malik Younsi, Shapes, fingerprints and rational lemniscates	1087
José Ángel Peláez, Compact embedding derivatives of Hardy spaces into Lebesgue spaces	1095
Stephen J. Gardiner and Myrto Manolaki, A convergence theorem for harmonic measures with applications to Taylor series	1109

(Continued on inside back cover)



0002-9939(201603)144:3;1-K