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 \LaTeX or \AMSTeX.

Very short notes not to exceed two printed pages are also accepted, and appear under the heading SHORTER NOTES. Items deemed suitable include an elegant new proof of an important and well-known theorem, an illuminating example or counterexample, or a new viewpoint on familiar results. New results, if of a brief and striking character, might also be acceptable, though in general a paper which is merely very short will not be suitable for the SHORTER NOTES department.

As of March 31, 1995, the backlog for this journal was approximately 9 issues. This estimate is the result of dividing the number of manuscripts for this journal in the Providence office that have not yet gone to the printer on the above date by the average number of articles per issue over the previous twelve months, reduced by the number of issues published in four months (the time necessary for editing and composing a typical issue).

A Copyright Transfer Agreement is required before a paper will be published in this journal. By submitting a paper to this journal, authors certify that the manuscript has not been submitted to nor is it under consideration for publication by another journal, conference proceedings, or similar publication.

Information for Authors and Editors

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, there should be the 1991 Mathematics Subject Classification representing the primary and secondary subjects of the article. This may be followed by a list of key words and phrases describing the subject matter of the article and taken from it. A list of the numbers may be found in the annual index of Mathematical Reviews, published with the December issue starting in 1990, as well as from the electronic service e-MATH [telnet e-MATH.ams.org (or telnet 130.44.1.100)]. Login and password are e-math. For journal abbreviations used in bibliographies, see the list of serials in the latest Mathematical Reviews annual index. When the manuscript is submitted, authors should supply the editor with electronic addresses if available. These will be printed after the postal address at the end of each article.

Two copies of the paper should be sent directly to the appropriate Editor and the author should keep one copy.

\TeX files available upon request. Authors may request a copy of the \TeX files of their papers by sending e-mail to file-request@math.ams.org or by contacting the Editorial Department, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. 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 \TeX file will be sent to the author making the request after the article goes to the printer. If the requestor can receive Internet e-mail, please include the e-mail 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
\TeX\ production at the AMS sometimes requires extra fonts and macros that are not yet publicly available, \TeX\ files cannot be guaranteed to run through the author's version of \TeX\ without errors. The AMS regrets that it cannot provide support to eliminate such errors in the author's \TeX\ environment.

**Electronically prepared manuscripts.** The AMS encourages submission of electronically prepared manuscripts in \texttt{AMSTeX} or \texttt{AMS-\LaTeX}\ because properly prepared electronic manuscripts save the author proofreading time and move more quickly through the production process. To this end, the Society has prepared author packages for each AMS publication. Author packages include instructions for preparing electronic manuscripts, the \texttt{AMS Author Handbook}, samples, and a style file that generates the particular design specifications of that publication series for both \texttt{AMSTeX} and \texttt{AMS-\LaTeX}.

Those authors who make use of these style files from the beginning of the writing process will further reduce their own efforts. Electronically submitted manuscripts prepared in plain \TeX\ or \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. Users of plain \TeX\ should have little difficulty learning \texttt{AMSTeX}, and \texttt{AMS-\LaTeX}\ users will find that \texttt{AMSTeX} is the same as \texttt{\LaTeX}\ with additional commands to simplify the typesetting of mathematics.

Authors with FTP access may retrieve an author package from the Society's Internet node \texttt{e-MATH.ams.org} (130.44.1.100). For those without FTP access, the author package can be obtained free of charge by sending e-mail to \texttt{pub@math.ams.org} (Internet) or from the Publication Division, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. When requesting an author package, please specify \texttt{AMSTeX} or \texttt{AMS-\LaTeX}\ and the publication in which your paper will appear.

At the time of submission, authors should indicate if the paper has been prepared using \texttt{AMSTeX} or \texttt{AMS-\LaTeX}\ and provide the Editor with a paper manuscript that matches the electronic manuscript. 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 manuscript to the Editor, who will forward a copy to the Providence office. Editors will require authors to send their electronically prepared manuscripts to the Providence office in a timely fashion. Electronically prepared manuscripts can be sent via e-mail to \texttt{pub-submit@math.ams.org} (Internet) or on diskette to the Editorial Department, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. When submitting an electronic manuscript, 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 submit files are included in the author package.

Any inquiries concerning a paper that has been accepted for publication should be sent directly to the Editorial Department, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248.
Editors

Authors are requested to send papers directly to the appropriate Editor (the one whose area of responsibility and expertise, as described below, most closely approximates the subject field of the manuscript). Only when in doubt about an appropriate Editor, should manuscripts be sent to the Coordinating Editor responsible for the area in mathematics most closely connected to the paper. If in doubt about the area, send manuscript to the Managing Editor, to whom all other communication about the journal should also be addressed. (All addresses should include the line “Department of Mathematics”, unless another department is indicated.)

Managing Editor: Irwin Kra, SUNY at Stony Brook, Stony Brook, NY 11794-3651
e-mail: irwin@math.sunysb.edu

1. ODE, PDE, GLOBAL ANALYSIS, AND DYNAMICAL SYSTEMS
Coordinating Editor: Linda Keen, CUNY-Lehman College, Bronx, NY 10468,
e-mail: ljklc@cunyvm.cuny.edu or ljklc@cunyvm.bitnet

Partial differential equations, Jeffrey B. Rauch, University of Michigan, Angell Hall, Ann Arbor, MI 48109, e-mail: rauch@math.lsa.umich.edu

Dynamical systems and ergodic theory, Mary Rees, Department of Pure Mathematics, University of Liverpool, P.O. Box 147, Liverpool L69 3BX, United Kingdom, e-mail: mreese@liverpool.ac.uk

Ordinary differential equations and special functions, Hal L. Smith, Arizona State University, Tempe, AZ 85287, e-mail: halsmith@math.la.asu.edu

Global analysis, Linda Keen

2. LIE GROUPS, TOPOLOGY, AND GEOMETRY
Coordinating Editor: Peter Li, University of California, Irvine, CA 92717,
e-mail: pli@math.uci.edu

Topological groups and Lie groups (symmetric spaces), Roe Goodman, Rutgers University, New Brunswick, NJ 08903-2101, e-mail: goodman@math.rutgers.edu

Riemannian geometry (including affine, pseudo-Riemannian, contact, classical, and Lorentzian geometries), Christopher Croke, University of Pennsylvania, Philadelphia, PA 19104-6317, e-mail: ccroke@math.upenn.edu

Geometric analysis (geometric PDE, minimal surfaces, harmonic maps) and Kahler geometry, Peter Li

Algebraic topology (higher dimensional topology), Thomas Goodwillie, Brown University, Box 1917, Providence, RI 02912, e-mail: tomsg@brownvm.bitnet

Metric and geometric topology, James West, Cornell University, White Hall, Ithaca, NY 14853-7901, e-mail: west@math.cornell.edu

Set-theoretic and general topology, Franklin D. Tall, University of Toronto, Toronto, Ontario, Canada M5S 1A1, e-mail: tall@math.toronto.edu

Low dimensional topology and differential topology (knot theory, 3- and 4-manifolds, Gauge-theory), Ronald Stern, University of California, Irvine, CA 92717, e-mail: rsterne@math.uci.edu

3. ANALYSIS AND OPERATOR THEORY
Coordinating Editor: Clifford J. Earle, Jr., Cornell University, White Hall, Ithaca, NY 14853-7901, e-mail: cliff@math.cornell.edu

One complex variable and potential theory, Albert Baernstein II, Washington University, St. Louis, MO 63130-4899, e-mail: C31801AB@WUVMD.BITNET

Several complex variables, Eric Bedford, Department of Mathematics, Indiana University, Bloomington, IN 47405, e-mail: BEDFORD@INDIANA.BITNET

Functional analysis, Dale Alspach, Oklahoma State University, Stillwater, OK 74078-0613, e-mail: alspach@hilbert.math.okstate.edu

Complex variables, functional analysis, and operator theory, Theodore W. Gamelin, University of California, Los Angeles, CA 90024, e-mail: twg@math.ucla.edu

Functional analysis and operator theory, Palle E. T. Jorgensen, University of Iowa, Iowa City, IA 52242

Classical and harmonic analysis, J. Marshall Ash, DePaul University, Chicago, IL 60614, e-mail: MATJMA@DEPAUL.BITNET
Classical and harmonic analysis, Christopher D. Sogge, University of California, Los Angeles, CA 90024, e-mail: sogge@math.ucla.edu

Analytic number theory and automorphic forms, Dennis A. Hejhal, School of Mathematics, University of Minnesota, Minneapolis, MN 55455-0488, e-mail: hejhal@math.umn.edu

4. ALGEBRA, NUMBER THEORY, AND COMBINATORICS

Coordinating Editor: M. Susan Montgomery, University of Southern California, DRB 155, Los Angeles, CA 90089-1113, e-mail: smontgom@math.usc.edu

General number theory, William W. Adams, University of Maryland, College Park, MD 20742-4015, e-mail: wwa@math.umd.edu

General algebra, Lance W. Small, University of California San Diego, La Jolla, CA 92093-0112, e-mail: lwsmall@ucsd.edu

Commutative algebra, Wolmer V. Vasconcelos, Rutgers University, New Brunswick, NJ 08903-2101, e-mail: vasconce@rings.rutgers.edu

Group theory, Ronald M. Solomon, Ohio State University, Columbus, OH 43210-1101, e-mail: solomon@function.mps.ohio-state.edu

K-theory, algebraic groups, algebraic geometry, Eric M. Friedlander, Northwestern University, Evanston, IL 60208-2730, e-mail: eric@math.nwu.edu

Combinatorics, Jeffry N. Kahn, Rutgers University, New Brunswick, NJ 08903-2101, e-mail: jkahn@math.rutgers.edu

Analytic number theory and automorphic forms, Dennis A. Hejhal, School of Mathematics, University of Minnesota, Minneapolis, MN 55455-0488, e-mail: hejhal@math.umn.edu

Logic and foundations, Andreas R. Blass, University of Michigan, Ann Arbor, MI 48109-1003, e-mail: ablass@umich.edu

Lie algebras and Lie groups, Roe Goodman, Rutgers University, New Brunswick, NJ 08903-2101, e-mail: goodman@math.rutgers.edu

Noncommutative rings, Ken Goodearl, University of California, Santa Barbara, CA 93106, e-mail: goodearl@math.ucsb.edu

5. APPLIED MATHEMATICS, PROBABILITY, AND STATISTICS

Coordinating Editor: James Glimm, Department of Applied Mathematics and Statistics, SUNY at Stony Brook, Stony Brook, NY 11794-3600, e-mail: glimm@ams.sunysb.edu

Probability, Richard T. Durrett, Cornell University, White Hall, Ithaca, NY 14853-7901, e-mail: rtd@cornella.cit.cornell.edu

Statistics, Wei Y. Loh, Department of Statistics, University of Wisconsin, Madison, WI 53706-1693, e-mail: loh@stat.wisc.edu

Applied mathematics, David Sharp, Theoretic Division, Los Alamos National Laboratory MSB285, Los Alamos, NM 87545, e-mail: dhs@lanl.gov

John Trangenstein, Duke University, Durham, NC 27706, e-mail: johnt@math.duke.edu

Control theory, John A. Burns, Interdisciplinary Center for Applied Mathematics, Virginia Polytech Institute, Blacksburg, VA 24061-0531, e-mail: burnsreg@vtvm1.cc.vt.edu
Kazunori Kodaka and Hiroyuki Osaka, Real rank of tensor products of C*-algebras  .  2213
Toby O'Neil, A measure with a large set of tangent measures  .  2217

D. GEOMETRY

Daryl Cooper, Quasi-isometries of hyperbolic space are almost isometries  .  2221

E. LOGIC AND FOUNDATIONS

Arthur W. Apter, On the first $n$ strongly compact cardinals  .  2229

G. TOPOLOGY

Juris Steprans and Stephen Watson, Mutually complementary families of $T_1$ topologies, equivalence relations and partial orders  .  2237
Min Ho Lee, Twisted torus bundles over arithmetic varieties  .  2251
Wojciech Olszewski, Completion theorem for cohomological dimensions  .  2261
Jeffrey Fox and Peter Haskell, Index theory for perturbed Dirac operators on manifolds with conical singularities  .  2265
Kenji Tsuboi, On the determinant and the holonomy of equivariant elliptic operators  .  2275
PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY

CONTENTS

Vol. 123, No. 7 Whole No. 433 July 1995

A. ALGEBRA, NUMBER THEORY, AND COMBINATORICS

George Grätzer, Ivan Rival, and Nejib Zaguia, Small representations of finite distributive lattices as congruence lattices ...................................................... 1959
Hélène Dherte, Quadratic descent of involutions in degree 2 and 4 .............................................. 1963
Kenneth G. Wolfson, Isomorphisms between endomorphism rings of modules .............................................. 1971
Michael A. Bean, A note on the Thue inequality ............................................................................. 1975
Murray Bremner, Four-point affine Lie algebras .......................................................................... 1981
Patrick J. Morandi and B. A. Sethuraman, Noncrossed product division algebras with a Baer ordering ............................................................................................. 1995
Stephen D. Cohen, Gary L. Mullen, and Peter Jau-Shyong Shiue, The difference between permutation polynomials over finite fields .................................................................. 2011
D. Moldavanski and N. Sibyakova, On the finite images of some one-relator groups .................. 2017

B. ANALYSIS

Wing Suet Li and Elizabeth Strouse, Reflexivity of tensor products of linear transformations 2021
Jose Miguel Alonso, Optimal intervals of stability of a forced oscillator ............................................. 2031
A. K. Varma, Some inequalities of algebraic polynomials .................................................................. 2041
G. Jungck and H. K. Pathak, Fixed points via “biased maps” ............................................................... 2049
Julius B. Barbanel and Alan D. Taylor, Preference relations and measures in the context of fair division ................................................................................................................................. 2061
B. Malcolm Brown and Mourad E. H. Ismail, A right inverse of the Askey-Wilson operator 2071
Athanassios G. Kartsatos, On the compactness of the evolution operator generated by certain nonlinear Ω-accretive operators in general Banach spaces .................................................................................. 2081
Barbara D. MacCluer and Peter R. Mercer, Composition operators between Hardy and weighted Bergman spaces on convex domains in $C^N$ ........................................................................... 2093
Yonne Mi Kim, Carleman inequalities for the Dirac operator and strong unique continuation 2103
Lecch Maligranda, Josip E. Pečarić, and Lars Erik Persson, Stolarsky's inequality with general weights ................................................................................................................................. 2113
Jean Guillerme, Intermediate value theorems and fixed point theorems for semi-continuous functions in product spaces ......................................................................................................... 2119
V. Kéyantuo, A note on interpolation of semigroups .......................................................................... 2123
Radu Gădălăcu, On polynomially bounded operators with rich spectrum ........................................... 2133
Shouchuan Hu and Nikolaos S. Papageorgiou, Delay differential inclusions with constraints 2141
Walter Bergweiler, On the composition of transcendental entire and meromorphic functions 2151
Zhuang Ye, The error term of holomorphic mappings in Nevanlinna theory ........................................ 2155
Yuichi Kanjin and Enji Sato, The Hardy-Littlewood theorem on fractional integration for Laguerre series ................................................................................................................. 2165
Hari Bercovici and Srdjan Petrović, Generalized scalar operators as dilations 2173
Y.-S. Han, The embedding theorem for the Besov and Triebel-Lizorkin spaces on spaces of homogeneous type .................................................................................................................... 2181
Brian Coomes, On the torsion part of $C([a]$ with respect to the action of a derivation ................ 2191
Ole Christensen, A Paley-Wiener Theorem for frames ..................................................................... 2199
Aleksander Maliszewski, Characteristic functions and products of bounded derivatives .............. 2203

(Continued on inside back cover)