Proceedings
of the
American Mathematical Society

EDITED BY
Thomas H. Brylawski
Jeff Cheeger
Doug Curtis
William J. Davis
Richard R. Goldberg, *Managing Editor*
David M. Goldschmidt
Thomas J. Jech
W. E. Kirwan
Thomas Kurtz
David J. Lutzer
Catherine L. Olsen
Donald Passman
Donald Sarason
Reinhard E. Schultz
George R. Sell
J. Jerry Uhl, Jr.
William C. Waterhouse
Lawrence A. Zalcman

Volume 86, Number 2, Pages 189–362
October 1982, Whole Number 280

Providence, Rhode Island USA

ISSN 0002-9939

Proceedings of the American Mathematical Society

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

Editorial Policy

1. On January 22, 1975, the Council of the American Mathematical Society voted:

"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 shall solicit, and encourage publication of, worthy papers of length not exceeding 11 typed pages.

"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."

2. On January 23, 1979, the Council of the American Mathematical Society abolished blind refereeing as a policy for the Proceedings, but decided that any author who so requests and who provides a blind copy of a manuscript will have the manuscript refereed blind.

Two copies of a manuscript should be submitted. If blind refereeing is intended, one should be complete and one blind, and then the latter will be sent to the referee without disclosure of the author's name or institution.

SUBSCRIPTION INFORMATION. PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY is published monthly. Subscription prices for Volumes 84–86 (1982) are $190.00 list; $95.00 member. Combination paper and microform (microfiche or microfilm) subscription prices are $254.00 list; $127.00 member. Microfiche of each issue will be mailed the fastest way before the camera copy is sent to the printer.

BACK NUMBER INFORMATION. Back number prices *per volume* are for Volumes 1–77, $52.00 list, $39.90 member; for Volumes 78–83, $84.00 list, $63.00 member. Beginning with Volume 68, back volumes are available in microfiche or microfilm; volumes before Volume 68 are available in microfilm only. The microfilm may be mounted on spools or in Kodak or 3M cartridges. Only current subscribers are eligible to purchase back volumes on microform. Write to the AMS for a detailed price list.

Subscriptions and orders for publications of the American Mathematical Society should be addressed to American Mathematical Society, P. O. Box 1571, Annex Station, Providence, R. I. 02901. *All orders must be accompanied by payment.* Other correspondence should be addressed to P. O. Box 6248, Providence, R. I. 02940.

PROCEEDINGS of the American Mathematical Society is published monthly by the American Mathematical Society at 201 Charles Street, Providence, R. I. 02904. Second-class postage is paid at Providence, Rhode Island. Postmaster: Send address changes to PROCEEDINGS, American Mathematical Society, P. O. Box 6248, Providence, R.I. 02940

Copyright © 1982 American Mathematical Society
Printed in the United States of America

Manuscript Information

1. Articles submitted for publication should be typewritten, double spaced, and no more than 11 ($8\frac{1}{2}'' \times 11''$) pages long. The *Manual for Authors*, available from the Society, should be consulted for symbols and style conventions. Authors should take the greatest possible care in preparing the original manuscript. Hand drawn symbols are satisfactory, if clearly done; directions to the printer should be included where necessary on a separate sheet. Authors must keep complete copies of their manuscripts, and editors will acknowledge receipt.

2. The first page should consist of a *descriptive title*, followed by an *abstract* which 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, but placed before the first footnote, there should be first the 1980 *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. The 1980 Mathematics Subject Classification with instructions for its use can be found in the 1978 Subject Index to Mathematical Reviews.

3. A Copyright Transfer Agreement is required before a paper will be published in the Proceedings. A copy of the form is sent with the acknowledgement of receipt of manuscript from the Providence office of the Society. Authors are urged to return the forms immediately to prevent delays in processing and publishing of the manuscript.

REPRINTS AND ADDRESS CHANGES. Any inquiries concerning a paper which has been accepted for publication, including information regarding reprints or changes of address for mailing proof, should be sent directly to the Editorial Department, American Mathematical Society, P. O. Box 6248, Providence, Rhode Island 02940.

GALLEY PROOF. When a paper with more than one author has been accepted for publication, only one set of galley proof will be sent. Joint authors should, therefore, indicate which of them should receive galley proof in the event that the manuscript is accepted for publication.

PUBLICATION CHARGES. The research journals of the American Mathematical Society carry a page charge of $50.00 per page to help defray the cost of publication. This amount is charged to the institution or to a contract supporting the research reported in the published paper. The publication charge policy of the United States Federal Council for Science and Technology (FCST) is reported on page 112 of the February, 1975 issue of the NOTICES of the American Mathematical Society. In no case is the author personally responsible for paying the page charge, nor is acceptance of the author's paper for publication dependent upon payment of the page charge.

BACKLOG. 100 pages. Papers currently being received by the editors will be published in 10–12 months.

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 acknowledgement of the source is given.

Republication, systematic copying, or multiple reproduction of any material in this publication (including abstracts) is permitted only under license from the American Mathematical Society. Requests for such permission should be addressed to the Executive Director, American Mathematical Society, Box 6248, Providence, Rhode Island 02940.

The appearance of the code on the first page of an article in this journal indicates the copyright owner's consent for copying beyond that permitted by Sections 107 or 108 of the U. S. Copyright Law, provided that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc., 21 Congress Street, Salem, Massachusetts 01970. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.

Submission of Manuscript

Send papers directly to one of the editors listed under the subject field of the paper. The numbers in parentheses are the first two digits of major classifications from the 1980 Mathematics Subject Classification and describe the fields being handled by the editor.

LOGIC AND FOUNDATIONS (03 04)

Thomas J. Jech, Department of Mathematics, Pennsylvania State University, University Park, Pennsylvania 16802

COMBINATORICS AND DISCRETE MATHEMATICS (05 15)

Thomas H. Brylawski, Department of Mathematics, University of North Carolina, Chapel Hill, North Carolina 27514

COMMUTATIVE ALGEBRA (06 12 13 14 15 18)

William C. Waterhouse, Department of Mathematics, Pennsylvania State University, University Park, Pennsylvania 16802

GENERAL ALGEBRA (16 17 18 08)

Donald Passman, Department of Mathematics, University of Wisconsin, Madison, Wisconsin 53706

GROUP THEORY (20)

David M. Goldschmidt, Department of Mathematics, University of California at Berkeley, Berkeley, California 94720

ALGEBRAIC AND DIFFERENTIAL TOPOLOGY (55 57 58)

Reinhard E. Schultz, Department of Mathematics, Purdue University, West Lafayette, Indiana 47907

REAL VARIABLES (26 28 40)

J. Jerry Uhl, Jr., Department of Mathematics, University of Illinois, Urbana, Illinois 61801

COMPLEX VARIABLES AND NUMBER THEORY (10 30 31 32)

W. E. Kirwan, Department of Mathematics, University of Maryland, College Park, Maryland 20742

Lawrence A. Zalcman, Department of Mathematics, University of Maryland, College Park, Maryland 20742

DIFFERENTIAL EQUATIONS AND DYNAMICAL SYSTEMS (33 34 35 39 49 58)

George R. Sell, School of Mathematics, University of Minnesota, Minneapolis, Minnesota 55455

GENERAL ANALYSIS (41 42 43 44 45)

Richard R. Goldberg, Department of Mathematics, Vanderbilt University, Nashville, Tennessee 37235

FUNCTIONAL ANALYSIS AND OPERATOR THEORY (46 47)

Catherine L. Olsen, Department of Mathematics, State University of New York at Buffalo, Buffalo, New York 14214

FUNCTIONAL ANALYSIS AND CONVEXITY (46 52)

William J. Davis, Department of Mathematics, Ohio State University, Columbus, Ohio 43210

COMPLEX VARIABLES, FUNCTIONAL ANALYSIS AND OPERATOR THEORY (30 46 47)

Donald E. Sarason, Department of Mathematics, University of California at Berkeley, Berkeley, California 94720

LIE GROUPS AND GEOMETRY (22 51 53)

Jeff Cheeger, Department of Mathematics, State University of New York at Stony Brook, Stony Brook, New York 11794

GENERAL TOPOLOGY (54)

David J. Lutzer, Department of Mathematics, Texas Tech University, Lubbock, Texas 79409

Doug W. Curtis, Department of Mathematics, Louisiana State University, Baton Rouge, Louisiana 70803

PROBABILITY AND OTHER FIELDS (60–99 inclusive)

Thomas G. Kurtz, Department of Mathematics, University of Wisconsin, Madison, Wisconsin 53706

All other communications should be addressed to the Managing Editor, Richard R. Goldberg, at the above address.

ABCDEFGHIJ–AMS–898765432

CONTENTS

Vol. 86, No. 2 October 1982 Whole No. 280

A. ALGEBRA AND NUMBER THEORY

On the lattice of subalgebras of an algebra. By LINDA L. DENEEN ... 189
On ideal class groups of 2-power exponent. By A. G. EARNEST and O. H. KÖRNER ... 196
Intersections of Γ-isotype subgroups in abelian groups. By JINDŘICH BEČVÁŘ ... 199
On double centralizer subgroups of some finite p-groups. By YING CHENG ... 205
The endomorphism ring of an artinian module whose homogeneous length is finite. By RAINER SCHULZ ... 209
Ideals and centralizing mappings in prime rings. By JOSEPH H. MAYNE ... 211
Ruled function fields. By JAMES K. DEVENEY ... 213

B. ANALYSIS

Extreme points and $l_1(\Gamma)$-spaces. By NINA M. ROY ... 216
Regular operator equations: Conditions for regularity. By GEORGE KARAKOSTAS ... 219
Elementary proofs of some asymptotic radial uniqueness theorems. By ROBERT D. BERMAN ... 226
On line integrals of rational functions of two complex variables. By E. AZOFF, K. CLANCEY and I. GOHBERG ... 229
Holomorphic mappings of domains with generic corners. By S. M. WEBSTER ... 236
L^1-convergence of Fourier series with complex quasimonotone coefficients. By VERA B. STANOJEVIC ... 241
Distance estimates for von Neumann algebras. By SHLOMO ROSENOER ... 248
Difference equations and multipoint boundary value problems. By P. W. ELOE ... 253
On factorizations of selfadjoint ordinary differential operators. By ANTONIO GRANATA ... 260
Nondiscriminating sets for H^∞. By DONALD E. MARSHALL, ARNE STRAY and CARL SUNDBERG ... 267
A zero-one, Borel probability which admits of no countably additive extensions. By LESTER E. DUBINS ... 273
Nuclear faces of state spaces of C^*-algebras. By C. J. K. BATTY ... 275
On proximinality in $L_1(T \times S)$. By S. M. HOLLAND, W. A. LIGHT and L. J. SULLEY ... 279
Jordan-morphisms in *-algebras. By KLAUS THOMSEN ... 283
Factorisation of characteristic functions on noncommutative groups. By AUBREY WULFSOHN ... 287
The Radon transform on a family of curves in the plane. II. By A. M. CORMACK ... 293
A projected trace and partwise isometric transformations of almost periodic systems. By ROBERT E. VINOGRAD ... 299
A remark on linear differential systems with the same invariant subbundles. By ROBERT E. VINOGRAD ... 305
Some characterizations of weak Radon-Nikodym sets. By ELIAS SAAB ... 307

D. GEOMETRY

Conformally flat spaces and a pinching problem on the Ricci tensor. By TH. HASANIS ... 312

E. LOGIC AND FOUNDATIONS

The minimal normal filter on $P_\kappa\lambda$. By DONNA M. CARR ... 316

G. TOPOLOGY

Minimal entropy for endomorphisms of the circle. By RYUICHI ITO ... 321
Splitting S^4 on RP^2 via the branched cover of CP^2 over S^4. By TERRY LAWSON ... 328
Appropriate locally convex domains for differential calculus. By RICHARD A. GRAFF and WOLFGANG M. RUESS ... 331
Common fixed points for a class of commuting mappings on an interval. By J. CANO ... 336
The nonrealizability of modular rings of polynomial invariants by the cohomology of a topological space. By LARRY SMITH ... 339
Counting fixed points. By IRA ROSENHOLTZ ... 341
On the irreducibility of an induced representation. II. By JOHN C. QUIGG ... 345
Cauchy conditions on symmetrics. By S. W. DAVIS ... 349
Geometric realization of $\pi_0\epsilon(M)$. By KYUNG BAI LEE ... 353

CONBINATORICS

Maximal intersecting families of finite sets and n-uniform Hjelmslev planes. By DAVID A. DRAKE and SHARAD S. SANE ... 358