## PROCEEDINGS

OF THE

## American Mathematical Society

EDITED BY<br>FRED G. BRAUER<br>W. H. J. FUCHS<br>IRVING GLICKSBERG<br>ARTHUR MATTUCK<br>ERNEST A. MICHAEL<br>P. EMERY THOMAS

WITH THE COÖPERATION OF
W. W. Boone

Joshua Chover

VOLUME 24, NUMBER 1
JANUARY, 1970

PUBLISHED BY THE AMERICAN MATHEMATICAL SOCIETY PROVIDENCE, RHODE ISLAND

## Proceedings of the American Mathematical Society

The Proceedings of the American Mathematical Society is devoted entirely to research in pure and applied mathematics, and the publication of original papers of moderate length. Articles for insertion should be typewritten and double spaced. Ditto is not generally satisfactory, although other modes of multiple reproduction may be. The maximum length of an acceptable paper is about 8 printed pages. (Since a page of the Proceedings contains about 400 words, a rule of thumb is that under 10 typed pages is probably within the limit, but that over 12 typed pages is probably too 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, not in the accompanying letter. Authors must keep a complete copy of their manuscript, and editors will acknowledge receipt; manuscripts can therefore be sent by ordinary mail and any other kind (registered, certified) is entirely unnecessary.

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). It should be at least one complete sentence, but not over 150 words, with the upper limit primarily for longer papers. The title should be short, but informative; useless or vague phrases such as "some remarks about" or "concerning" should be avoided. At the end of the article, placed before the first footnote, there should be first the A.M.S. subject classification numbers representing the primary and secondary subjects of the article, followed by a list of key words and phrases describing the subject matter of the article and taken from it. A list of subject classification numbers is printed at the end of each volume of Mathematical Reviews. See the June 1969 Notices for more details, as well as illustrative examples.

Very short notes (not to exceed 1 printed page) of an unusual nature 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 of 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.)

Papers in algebra and number theory should be sent to Arthur Mattuck, Room 2-275, Mathematics Department, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139 , or to Joserh J. Rotman, Mathematics Department, University of Illinois, Urbana, Illinois 61801.

Papers in modern or classical analysis should be sent to Irving Glicksberg, Mathematics Department, University of Washington, Seattle, Washington 98105, or to W. H. J. Fuchs, White Hall, Cornell University, Ithaca, New York 14850.

Papers in algebraic geometry should be sent to Arthur Mattuck; papers in set-theoretic and general topology to Ernest Michael, Mathematics Department, University of Washington, Seattle, Washington 98105; in algebraic topology and all other types of geometry to P. Emery Thomas, Mathematics Department, University of California, Berkeley, California 94720.

Papers in applied mathematics, differential equations, and related areas of analysis should be sent to Fred Brauer, Mathematics Department, University of Wisconsin, Madison, Wisconsin 53706.

Papers in probability, statistics, and related fields should be sent to Joshua Chover, Mathematics Department, University of Wisconsin, Madison, Wisconsin 53706.

Papers in logic, set theory, and related areas should be sent to W. W. Boone, Mathematics Department, University of Illinois, Urbana, Illinois 61801.

All other communications should be addressed to the Managing Editor, W. H. J. Fuchs, at the above address.

Inquiries from authors regarding reprints, or changes of addresses for mailing proofs, should be sent directly to the Editorial Department, American Mathematical Society, P. O. Box 6248, Providence, Rhode Island 02904.

Three volumes of four issues are planned for 1970 . The subscription price is $\$ 60.00$ for the three volumes. Back issues of Volumes $1-16$ are available at a price of $\$ 14.00$ each, Volumes $17-19$ at a price of $\$ 18.00$ each, and Volumes $20-23$ at a price of $\$ 30.00$ each.

[^0]
# PROCEEDINGS 

OF THE

# American Mathematical Society 

## EDITED BY

FRED G. BRAUER
W. H. J. FUCHS

IRVING GLICKSBERG

ARTHUR MATTUCK
ERNEST A. MICHAEL
JOSEPH J. ROTMAN

WITH THE COÖPERATION OF

W. W. Boone<br>Joshua Chover

VOLUME 24
JANUARY-APRIL 1970
Contents-Continued from back cover
On embedding of lattices belonging to the same genus. By H. Jaco- binski ..... 134
Torsion theories and semihereditary rings. By Darrell R. Turnidge. ..... 137
Radicals with integrity and row-finite matrices. By Franklin Harmo. ..... 144
On generating systems for abelian groups. By P. L. Sperry ..... 148
Homogeneous primary abelian groups. By Dalton Tarwater ..... 154
Nodal algebras of dimension $p^{3}$. By Jerry I. Goldman ..... 156
An ergodic theorem for semigroups. By M. A. Akcoglu and J. Cunsolo ..... 161
A note on a theorem by H. D. Brunk. By Richard Dykstra ..... 171
Properties of almost continuous functions. By Paul E. Long and Earl E. McGehee, Jr. ..... 175
Accessibility spaces. By Gordon T. Whyburn ..... 181
Linearly ordered collections and paracompactness. By J. E. Vaughan ..... 186
On continuously semimetrizable and stratifiable spaces. By Carlos J. R. Borges ..... 193
Linearly ordered topological spaces. By S. L. Gulden, W. M. Fleisch- man and J. H. Weston ..... 197
$B(H)$ is very noncommutative. By Paul Willig. ..... 204
Extending commuting functions. By John Philip Huneke ..... 206
Jordan homomorphisms and derivations on semisimple Banach alge- bras. By A. M. Sinclair ..... 209
On decomposable operators. By Stephen Plafker ..... 215
The algebra of functions with Fourier transforms in $L^{p}$. By JoHn C. Martin and Leonard Y. H. Yap ..... 217
Shorter Notes
Weakly closed maximal triangular algebras are hyperreducible. By Peter Rosenthal ..... 220
Recurrence and preservation of measure. By F. H. Simons ..... 221

## CONTENTS

Vol. 24, No. 1 JANUARY, 1970 Whole No. 127
Page
A new criterion for uniform distribution. By P. E. O'NEIL ..... 1
On uniqueness of quasi-split real semisimple Lie algebras. By Linda Preiss Rothschild ..... 6
Inverses of polynomial functions in topological fields. By JOHN O. Kiltinen. ..... 9
Crossed products of simple rings. By Nobuo Nobusawa ..... 18
Jordan structures in simple graded rings. By Richard Speers ..... 22
$(-1,1)$ algebras. By Irvin Roy Hentzel ..... 24
A new proof of the transposition theorem. By Leopold Flatto ..... 29
Calculation of $H^{*}\left(B B O[k] ; Z_{2}\right)$. By Robert R. Clough ..... 32
$H$-manifolds have no nontrivial idempotents. By Robert F. Brown ..... 37
Interior and polynomial extensions of immersed circles. By Morris L.
Marx and Roger F. Veriey ..... 41
On a theorem of Preissmann. By William P. Byers. ..... 50
Generalized theories for $k$-spaces. By Allan J. Sieradski ..... 52
Retracting diffeomorphisms of $n$-spheres. By J. M. Robertson ..... 57
Noncombinatorial triangulations and the Poincaré conjecture. By Ralph Tindell ..... 60
Equivalent norms for Sobolev spaces. By Robert A. Adams ..... 63
A two parameter perturbation estimate. By W. M. Greenlee. ..... 67
On the existence of fundamental solutions of boundary problems. By J. Barros-Neto ..... 75
Asymptotic behavior of light interior functions defined in the unit disc. By J. H. Mathews ..... 79
Boundedness and dimension for weighted average functions. By David P. Stanford ..... 82
On absolute Borel-type methods of summability. By D. Borwein ..... 85
A necessary condition for principal cluster sets to be void. By C. L. Belna ..... 90
Dense embeddings of Hilbert spaces. By J. S. Mac Nerney ..... 92
On starlike functions. By J. B. Twomey ..... 95
The $n$-separated-arc property for homeomorphisms. By C. L. Belna ..... 98
Nonnegative expansions of polynomials. By M. Wayne Wilson ..... 100
Note on a theorem of Nehari on Hankel forms. By Ju-Kwei Wang ..... 103
Projective representations and induced linear characters. By T. V. Fossum ..... 106
Path maps and continuity. By Eric Bedford ..... 112
On groups of order $2^{\alpha} 3^{\beta} p^{\gamma}$ with a cyclic Sylow 3-subgroup. By Marcel Herzog ..... 116
The Levitzki radical in Jordan rings. By Chester E. Tsai ..... 119
A necessary condition that two finite quasi-fields coordinatize isomor- phic translation planes. By M. L. Narayana Rao and F. W. Wilke ..... 124
Infinitely many nonisomorphic nilpotent algebras. By Chong-Yun Сhao ..... 126


[^0]:    The Proceedings of the American Mathematical Society is published monthly. Subscriptions orders for back numbers, and inquiries in regard to nondelivery of current numbers should be addressed to the American Mathematical Society, 321 S. Main St., P. O. Box 6248 , Providence, R. I. 02904.

    Second-class postage paid at Providence, Rhode Island and additional mailing offices.

