

PROCEEDINGS
OF THE
AMERICAN MATHEMATICAL SOCIETY

EDITED BY

W. H. J. FUCHS	E. A. MICHAEL
IRVING GLICKSBERG	IRVING REINER
ARTHUR MATTUCK	EMERY THOMAS
W. R. WASOW	

WITH THE COÖPERATION OF

W. W. BOONE	S. M. SHAH
JOSHUA CHOVER	HANS WEINBERGER

VOLUME 21, NUMBER 1
APRIL, 1969

PUBLISHED BY THE AMERICAN MATHEMATICAL SOCIETY
PROVIDENCE, RHODE ISLAND

Journals Published by the American Mathematical Society

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.

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 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.)

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 IRVING REINER, 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 WOLFGANG WASOW, 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, ARTHUR MATTUCK, 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.

Four volumes of three issues are planned for 1969. The subscription price is \$80.00 for the four volumes. Back issues of Volumes 1-16 are available at a price of \$14.00 each and Volumes 17-19 at a price of \$18.00 each.

The American Mathematical Society also publishes the following journals which accept research papers: BULLETIN, TRANSACTIONS and MATHEMATICS OF COMPUTATION. For details and the list of editors, please consult a recent issue. Reviews of the current mathematical literature of the world are published in MATHEMATICAL REVIEWS; editorial correspondence for this journal should be sent to: 416 Fourth Street, Ann Arbor, Michigan 48103.

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, P. O. Box 6248, Providence, R. I. 02904.

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

Copyright ©, American Mathematical Society, 1969

Printed in the United States of America

PROCEEDINGS
OF THE
AMERICAN MATHEMATICAL SOCIETY

EDITED BY
W. H. J. FUCHS **E. A. MICHAEL**
IRVING GLICKSBERG **IRVING REINER**
ARTHUR MATTUCK **P. E. THOMAS**
W. R. WASOW

WITH THE COÖPERATION OF
W. W. BOONE **S. M. SHAH**
JOSHUA CHOVER **HANS WEINBERGER**

VOLUME 21
APRIL-JUNE 1969

PUBLISHED BY THE AMERICAN MATHEMATICAL SOCIETY
PROVIDENCE, RHODE ISLAND

Contents—Continued from back cover

Induced representations of Lie algebras. II. By N. R. WALLACH.....	161
The order of the antipode of a Hopf algebra. By R. G. LARSON.....	167
On the endomorphism ring of a simple module over an enveloping algebra. By DANIEL QUILLLEN.....	171
A note on cover and avoidance properties in solvable groups. By S. BAUMAN....	173
On cohomology groups of Banach algebras. By WEI-LUNG TING.....	175
On two variable equations in free groups. By K. I. APPEL.....	179
Groups having at most three irreducible character degrees. By I. M. ISAACS.....	185
A certain class of identities on semigroups. By J. L. CHRISLOCK.....	189
On the compactness of the structure space of a ring. By WUHAN LEE.....	191
Extending Ulm's theorem without group theory. By FRED RICHMAN and ELBERT WALKER.....	194
Concerning a conjecture of Marshall Hall. By RICHARD SINKHORN.....	197
The general product of two finitely generated abelian groups. By EUGENE SCHENKMAN.....	202
On semiperfect and perfect rings. By F. L. SANDOMIERSKI.....	205
Watts cohomology of field extensions. By NEWCOMB GREENLEAF.....	208
Extended Malcev domains. By R. E. JOHNSON.....	211
Indefinite quadratic forms of determinant $\pm 2p$. By D. G. JAMES.....	214
Note on nonlinear contraction semigroups. By ISAO MIYADERA.....	219
Sheaf cohomology with bounds and bounded holomorphic functions. By YUM-TONG SIU.....	226
On a cohomology theory for pairs of groups. By LUIS RIBES.....	230
Separating points by semicharacters in topological semigroups. By J. W. BAKER and N. J. ROTHMAN.....	235
A semigroup analogue of Foguel's counterexample. By E. W. PACKEL.....	240
On uniformly approximable Sidon sets. By R. W. CHANEY.....	245
A note on " N th roots of operators." By M. FINKELSTEIN and A. LEBOW.....	250

SHORTER NOTES

Every operator is the sum of two irreducible ones. By HEYDAR RADJAVI.....	251
A complete and countable orthomodular lattice is atomic. By C. H. RANDALL....	253
A historical note on complex quadratic fields with class-number one. By H. M. STARK.....	254
The set of irreducible operators is dense. By HEYDAR RADJAVI and PETER ROSENTHAL.....	256

CONTENTS

Vol. 21, No. 1

APRIL, 1969

Whole No. 118

	Page
On a complement to Valiron's tauberian theorem for the Stieltjes transform. By D. F. SHEA.....	1
Summability of a sequence of Fourier coefficients by a triangular matrix transformation. By H. P. DIKSHIT.....	10
On the centralizer of a lattice. By S. P. WANG.....	21
Remark on a paper of Y. Ikebe. By IVAN SINGER.....	24
Decomposition theorems for vector measures. By J. K. BROOKS.....	27
A note on Ahlfors' theory of covering surfaces. By JOSEPH MILES.....	30
On the zeros of the Bergman function in doubly-connected domains. By PAUL ROSENTHAL.....	33
On sequential cores and a theorem of R. R. Phelps. By R. ATALLA and J. BUSTOZ.....	36
Symmetric operators with singular spectral functions. By R. C. GILBERT.....	43
A class of related Dirichlet and initial value problems. By L. R. BRAGG and J. W. DETTMAN.....	50
On a relation between absolute Abel and absolute Riesz summability. By J. S. RATTI.....	57
On a theorem of Azbelev and Caljuk. By T. L. SHERMAN.....	63
Finding a boundary for a 3-manifold. By L. S. HUSCH.....	64
The Arf invariant for knot types. By KUNIO MURASUGI.....	69
A note on the holonomy group of manifolds with certain structures. By D. E. BLAIR and A. P. STONE.....	73
Generalization of a theorem of Pósa. By H. V. KRONK.....	77
3-manifolds fibering over S^1 with nonunique connected fiber. By J. L. TOLLEFSON.....	79
Modularity in topological lattices. By D. E. EDMONDSON.....	81
Convex components, extreme points, and the convex kernel. By J. W. KENNELLY, W. R. HARE, JR., B. D. EVANS and W. H. LUDESCHER.....	83
Factorization of certain maps up to homotopy. By GEORGE KOZLOWSKI.....	88
A class of projective planes of cubic order. By PETER LORIMER.....	93
Integrability of almost Kaehler manifolds. By S. I. GOLDBERG.....	96
On the nonexistence of free differentiable S^3 -actions on homotopy spheres. By HSU-TUNG KU and MEI-CHIN KU.....	101
Completely regular maps, fiber maps and local n -connectivity. By G. S. UNGAR.....	104
A note on closed maps and metrizability. By D. M. HYMAN.....	109
A note on complete separation in the Stone topology. By G. A. JENSEN.....	113
Concerning semiconnected maps. By P. E. LONG.....	117
A theorem on one-to-one mappings onto the plane. By R. F. DICKMAN, JR.....	119
A note on cluster points of a semihereditary stable system of sets. By W. F. PFEFFER and W. J. WILBUR.....	121
Metric spaces all of whose decompositions are metric. By STEPHEN WILLARD.....	126
On a class of finer topologies with the same class of homeomorphisms. By YU-LEE LEE.....	129
An asymptotic estimate of Brownian path variation. By P. E. GREENWOOD.....	134
The Radon-Nikodym theorem and the mean convergence of Banach space valued martingales. By J. J. UHL, JR.....	139
On the decomposition of infinitely divisible characteristic functions with continuous Poisson spectrum. By ROGER CUPPENS.....	145
A characterization of cellular arcs in euclidean 3-space. By F. D. LONERGAN.....	153
On the connected identity component of the adèle-class group of an algebraic torus. By C. S. WEISMAN.....	155

Continued on inside back cover