

## JOURNALS PUBLISHED BY THE AMERICAN MATHEMATICAL SOCIETY

**Bulletin of the American Mathematical Society** is the official organ of the Society. It reports official acts of the Society and the details of its meetings. It contains some of the officially invited addresses presented before the Society, reviews of advanced mathematical books, and has a department of research announcements. Invited addresses offered for publication should be sent to HANS F. WEINBERGER, Department of Mathematics, University of Minnesota, Minneapolis, Minnesota 55455. Book reviews should be sent to PAUL R. HALMOS, Department of Mathematics, Indiana University, Bloomington, Indiana 47401. Research announcements are limited to 100 typed lines of 65 characters each. They are intended to communicate outstanding results that are to be reported in full elsewhere. Research announcements should be sent directly to a member of the Council of the American Mathematical Society who is also a member of an editorial committee of the Society. The names of these Council members are marked with asterisks on the list which appears on the inside back cover. All other correspondence about research announcements should be sent to JOHN L. KELLEY, Department of Mathematics, University of California, Berkeley, California 94720.

The first page of each article, including research announcements, that is submitted for publication should bear a *descriptive title* which should be short, but informative. Useless or vague phrases such as "some remarks about" or "concerning" should be avoided. Before the first footnote, there should be the *AMS (MOS) subject classification numbers* representing the primary and secondary subjects of the article. If a list of *key words and phrases* describing the subject matter of the article is included, it will also be printed as a footnote on the first page. The AMS (MOS) Subject Classification Scheme (1970) with instructions for its use can be found as an appendix to MATHEMATICAL REVIEWS, index to volume 39 (1970). See the June 1970 NOTICES for more details, as well as illustrative examples. The subscription price is \$14 per annual volume of six numbers.

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 on the original manuscript which of them should receive galley proof in the event that the manuscript is accepted for publication.

BACKLOG. NONE. 90% of the papers currently being communicated by the editors will be published in 3-4 months.

**Proceedings of the American Mathematical Society** is a monthly journal devoted entirely to research in pure and applied mathematics, principally to the publication of original papers of moderate length. A department called Shorter Notes was established for the purpose of publishing very short papers of an unusually elegant and polished character for which there is normally no other outlet. Papers in algebraic and differential topology should be sent to GLEN E. BREDON, Department of Mathematics, Rutgers University, New Brunswick, New Jersey 08903; in combinatorics and discrete mathematics to JAY R. GOLDMAN, School of Mathematics, University of Minnesota, Minneapolis, Minnesota 55455; in commutative algebra to ROBERT M. FOSSUM, Department of Mathematics, University of Illinois, Urbana, Illinois 61801; in complex variables and analytic number theory to LOUIS BRICKMAN, Department of Mathematics, State University of New York at Albany, Albany, New York 12203 or to PETER L. DUREN, Department of Mathematics, University of Michigan, Ann Arbor, Michigan 48104; in differential equations to RICHARD K. MILLER, Department of Mathematics, Iowa State University, Ames, Iowa 50010; in functional analysis and operator theory to CHANDLER DAVIS, Department of Mathematics, University of Toronto, Toronto (M5S1A1), Ontario, Canada or to RONALD G. DOUGLAS, Department of Mathematics, State University of New York at Stony Brook, Stony Brook, New York 11790 or to PETER A. FILLMORE, Department of Mathematics, Indiana University, Bloomington, Indiana 47401; in general algebra to BARBARA L. OSOFSKY, Department of Mathematics, Rutgers University, New Brunswick, New Jersey 08903; in general analysis to RICHARD R. GOLDBERG, Department of Mathematics, University of Iowa, Iowa City, Iowa 52240; in general topology to W. WISTAR COMFORT, Department of Mathematics, Wesleyan University, Middletown, Connecticut 06457 or to THOMAS A. CHAPMAN, Department of Mathematics, University of Kentucky, Lexington, Kentucky 40506; in geometry to JOSEPH A. WOLF, Department of Mathematics, University of California, Berkeley, California 94720; in group theory to NORMAN BLACKBURN, Department of Mathematics, University of Illinois at Chicago Circle, Chicago, Illinois 60680; in logic and foundations to ROBERT I. SOARE, Department of Mathematics, University of Illinois at Chicago Circle, Chicago, Illinois 60680; in probability and other fields to JAMES D. KUELBS, Department of Mathematics, University of Wisconsin, Madison, Wisconsin 53706; in real variables to RICHARD A. HUNT, Division of Mathematical Sciences, Purdue University, Lafayette, Indiana 47907. All other communications should be addressed to the Managing Editor W. WISTAR COMFORT.

**Mathematics of Computation** is a quarterly journal devoted to original papers in numerical analysis, the application of numerical methods and high-speed calculator devices, the computation of mathematical tables, the theory of high-speed calculating devices, and other aids to computation. In addition, reviews and notes in these and related fields are published. Prospective publications should be sent to the Editor, EUGENE ISAACSON, Courant Institute of Mathematical Sciences, New York University, 251 Mercer Street, New York, New York 10012.

**Mathematical Reviews** is a monthly journal devoted to abstracts and reviews of the current mathematical literature of the world. Each volume consists of six regular issues plus an index issue. Abstracts and reviews are grouped under subject headings.

**Transactions of the American Mathematical Society** is a monthly journal devoted entirely to research in pure and applied mathematics and, in general, includes longer papers than those in the PROCEEDINGS. Papers in analysis and applied mathematics should be sent to FRANÇOIS TREVES, Department of Mathematics, Rutgers University, New Brunswick, New Jersey 08903; in topology to PHILIP T. CHURCH, Department of Mathematics, Syracuse University, Syracuse, New York 13210; in algebra, number theory, and logic to DOCK S. RIM, Department of Mathematics, University of Pennsylvania, Philadelphia, Pennsylvania 19104; in geometry and abstract analysis to SHLOMO STERNBERG, Department of Mathematics, Harvard University, Cambridge, Massachusetts 02138; in statistics and probability to HARRY KESTEN, Department of Mathematics, Cornell University, Ithaca, New York 14850; in mathematical logic and foundations to ALSTAIR H. LACHLAN, Department of Mathematics, Simon Fraser University, Burnaby 2, British Columbia, Canada. All other communications to the editors should be addressed to the Managing Editor, DOCK S. RIM.

**Memoirs of the American Mathematical Society** constitute a series of paperbound research tracts which are of the same general character as the papers published in the TRANSACTIONS. An issue of the MEMOIRS contains either a single monograph or a group of cognate papers. Information on preparation of camera copy and charges for publication may be obtained by writing to the Editorial Department of the American Mathematical Society. Papers should be sent to the appropriate editor of TRANSACTIONS.

**Notices of the American Mathematical Society**, published eight times a year, announces the programs of the meetings of the Society. The NOTICES carries the abstracts of all contributed papers presented at the meetings of the Society and publishes news items of interest to mathematical scientists. All communications should be addressed to the Editor, American Mathematical Society, P.O. Box 6248, Providence, Rhode Island 02940. News items and insertions for each issue must be in the hands of the editor on or before the deadline for the abstracts for the papers to be presented in the meetings announced in that issue. These deadlines are published regularly on the inside front cover.

**Soviet Mathematics—Doklady** is a bimonthly translation journal containing the entire pure mathematics section of the DOKLADY AKADEMII NAUK SSSR, the Reports of the Academy of Sciences of the USSR. DOKLADY publishes about 500 articles a year, each about four pages long.

**Mathematics of the USSR—Izvestija**, a bimonthly journal, is a cover-to-cover translation of IZVESTIJA AKADEMII NAUK SSSR SERIJA MATEMATIČESKAJA, published by the Academy of Sciences of the USSR. This is a journal of current research in all fields of pure mathematics.

**Mathematics of the USSR—Sbornik** is a monthly journal and is a cover-to-cover translation of MATEMATIČESKIĪ SBORNIK (NOVAJA SERIJA), published by the Moscow Mathematical Society and the Academy of Sciences of the USSR. This is a journal of current research in all fields of pure mathematics.

**Theory of Probability and Mathematical Statistics** is the cover-to-cover translation into English of the Teorija Verojatnostei i Matematičeskaja Statistika published by Kiev University, beginning with the 1970 Soviet publication.

**Vestnik of the Leningrad University (Mathematics)** is the complete translation into English of the mathematics section of the Vestnik Leningradskogo Universiteta, beginning with the Soviet publication of 1968. All fields of mathematics are covered.

## CURRENT AWARENESS SERVICES

**Contents of Contemporary Mathematical Journals and New Publications**, issued bi-weekly, contains a subject-classified index of papers and books being published currently in mathematics.

## CONTENTS

Edmilson Pontes. Isometric minimal immersions of $S^3(a)$ in $S^N(1)$ .....	1239
Hugh M. Hilden. Every closed orientable 3-manifold is a 3-fold branched covering space of $S^3$ .....	1243
Richard M. Aron and Martin Schottenloher. Compact holomorphic mappings on Banach spaces and the approximation property .....	1245
John R. Rice. Adaptive quadrature: convergence of parallel and sequential algorithms .....	1250
Giuseppe Geymonat and Gerd Grubb. Spectral theory for boundary value problems for elliptic systems of mixed order .....	1255
Jill P. Mesirov-Kazdan. Calculus of variations: perturbations preserving condition (C) .....	1260
Wilbur Whitten. Characterizations of knots and links .....	1265
Christopher I. Byrnes. A spectral decomposition theorem for certain harmonic algebras .....	1271
J. Thomas Beale and Steven I. Rosencrans. Acoustic boundary conditions .....	1276
M. N. Dyer. Homotopy trees for periodic groups .....	1279
Index to Volume 80 .....	1284
Statement of Ownership, Management and Circulation .....	1294

### Members of the Council for 1974

Robert G. Bartle,\* Hyman Bass,\* Paul T. Bateman, Anatole Beck, Lipman Bers, Raoul H. Bott, James H. Bramble,\* Glen E. Bredon,\* William Browder, Edgar H. Brown, Jr.,\* Alberto P. Calderón,\* S. S. Chern,\* Philip T. Church,\* W. Wistar Comfort,\* Charles W. Curtis, Chandler Davis,\* Samuel Eilenberg,\* Robert M. Fossum,\* Frederick W. Gehring,\* Richard R. Goldberg,\* Michael Golomb, Walter H. Gottschalk, Mary W. Gray, Paul R. Halmos,\* Orville G. Harrold, Jr., Alston S. Householder,\* Eugene Isaacson,\* Irving Kaplansky, Herbert B. Keller, John L. Kelley, Harry Kesten,\* Robion C. Kirby, Alistair H. Lachlan,\* Lee Lorch, Saunders Mac Lane, Arthur P. Mattuck, Richard K. Miller,\* Edwin E. Moise, Cathleen S. Morawetz, P. S. Mostert, Barbara L. Osofsky,\* Franklin P. Peterson, Everett Pitcher, Murray H. Protter, Dock S. Rim,\* Kenneth A. Ross, Jane Cronin Scanlon, Jacob T. Schwartz,\* Robert T. Seeley, Allen L. Shields, I. M. Singer,\* Shlomo Sternberg,\* Dorothy Maharam Stone, Olga Taussky, François Trèves,\* Hans F. Weinberger,\* John W. Wrench, Jr.\*

---

\* Research announcements, limited to 100 typed lines of 65 spaces each, may be submitted to those members of the Council whose names are marked by asterisks. Such announcements are intended to communicate outstanding results that are to be reported in full elsewhere.

## CONTENTS

November 1974

Robin Hartshorne. Varieties of small codimension in projective space .....	1017
George E. Andrews. A general theory of identities of the Rogers-Ramanujan type .	1033
R. J. Duffin. Some problems of mathematics and science .....	1053
John D. Dixon. Review of "Infinite linear groups" by B. A. F. Wehrfritz .....	1071
Nathan Jacobson. Abraham Adrian Albert 1905-1972 .....	1075
Report of the Treasurer .....	1101
Louis H. Kauffman. Products of knots .....	1104
I. Erdelyi. Unbounded operators with spectral capacities .....	1108
Wallace Goldberg. On the determination of a Hill's equation from its spectrum ...	1111
Anthony Bak. The computation of surgery groups of odd torsion groups .....	1113
Sylvain E. Cappell. Unitary nilpotent groups and Hermitian $K$ -theory. I .....	1117
Teck-Cheong Lim. A fixed point theorem for multivalued nonexpansive mappings in a uniformly convex Banach space .....	1123
John E. Gilbert. $L^p$ -convolutions operators and tensor products of Banach spaces ..	1127
Ted Petrie. Obstructions to transversality for compact Lie groups .....	1133
G. I. Lehrer. Weil representations and cusp forms on unitary groups .....	1137
P. Stefan. Accessibility and foliations with singularities .....	1142
J. P. E. Hodgson. Subcomplexes of Poincaré complexes .....	1146
J. E. Jayne. The space of class $\alpha$ Baire functions .....	1151
P. Mah and S. A. Naimpally. Open and uniformly open relations .....	1157
Richard S. Ellis and Mark A. Pinsky. Asymptotic nonuniqueness of the Navier-Stokes equations in kinetic theory .....	1160
Bertram Walsh. An approximation property characterizes ordered vector spaces with lattice-ordered duals .....	1165
Anatole Beck. Conditional independence .....	1169
Vera Pless and N. J. A. Sloane. Binary self-dual codes of length 24 .....	1173
J. P. Alexander, P. E. Conner, G. C. Hamrick and J. W. Vick. Witt classes of integral representations of an Abelian $p$ -group .....	1179
Leo Sario. A criterion for the existence of biharmonic Green's functions .....	1183
Douglas C. Ravenel and W. Stephen Wilson. The Hopf ring for complex cobordism .	1185
Kurt Kreith. Nonselfadjoint fourth order differential equations with conjugate points .....	1190
Sylvain E. Cappell. Manifolds with fundamental group a generalized free product. I .	1193
Wolfgang Dahmen and Ernst Görlich. A conjecture of M. Golomb on optimal and nearly-optimal linear approximation .....	1199
V. Poénaru. A remark on simply-connected 3-manifolds .....	1203
F. Guerra, L. Rosen and B. Simon. The pressure is independent of the boundary conditions for $P(\phi)_2$ field theories .....	1205
Kuo-Tsai Chen. Solvability on manifolds by quadratures permitting only integrals .....	1210
M. Z. Nashed and Grace Wahba. Regularization and approximation of linear operator equations in reproducing kernel spaces .....	1213
Lipman Bers. On spaces of Riemann surfaces with nodes .....	1219
Chester Seabury. Some extension theorems for regular maps of Stein manifolds .....	1223
Daniel Drucker. Orbit structure of the exceptional Hermitian symmetric spaces. II ..	1225
A. H. Stroud and David L. Barrow. Gauss formulas for the Dirichlet problem .....	1230
James P. Lin. $H$ -spaces with finitely generated cohomology algebras .....	1233