Proceedings of the American Mathematical Society

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

Editorial Policy

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 15 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.

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 99–101 (1987) are $391.00 list; $313.00 institutional member; $235.00 individual member. A late charge of 10% of the subscription price will be imposed upon orders received from nonmembers after January 1 of the subscription year. Subscribers outside the United States and India must pay a postage surcharge of $25.00; subscribers in India must pay a postage surcharge of $38.00. Combination paper and microfiche subscription prices are $520.00 list; $416.00 institutional member. Microfiche of each issue will be mailed the fastest way possible before the camera copy is sent to the printer. Microfilm subscriptions may be purchased from University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

BACK NUMBER INFORMATION. Back number prices per volume are for Volumes 1–89, $110.00 list, $88.00 institutional; for Volumes 90–92, $125.00 list; $100.00 institutional member; for Volumes 93–95, $168.00 list; $134.00 institutional member; for Volumes 96–98, $185.00 list; $148.00 institutional members.

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. 02901-9930. 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 © 1987 American Mathematical Society. All rights reserved.

Printed in the United States of America

Information on Copying and Reprinting can be found at the back of this journal.

The paper used in this journal is acid-free and falls within the guidelines established to ensure permanence and durability. ☁
<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adachi, Toshiaki</td>
<td>Closed orbits of an Anosov flow and the fundamental group</td>
<td>595</td>
</tr>
<tr>
<td>Adams, Colin C.</td>
<td>The noncompact hyperbolic 3-manifold of minimal volume</td>
<td>601</td>
</tr>
<tr>
<td>Allaway, William R.</td>
<td>Orthogonality preserving maps and the Laguerre functional</td>
<td>82</td>
</tr>
<tr>
<td>Andréka, H.</td>
<td>Boolean reducts of relation and cylindric algebras and the cube problem</td>
<td>148</td>
</tr>
<tr>
<td>Ariño, Miguel A.</td>
<td>Convexity and Banach envelope of the weak $L_p$ spaces</td>
<td>661</td>
</tr>
<tr>
<td>Arteaga, Carlos</td>
<td>The complement of the stable manifold for one dimensional endomorphisms</td>
<td>367</td>
</tr>
<tr>
<td>Bacheli, Gregory F. and Saeki, Sadahiro</td>
<td>Banach algebras with uncomplemented radical</td>
<td>271</td>
</tr>
<tr>
<td>Balcar, B. and Franek, F.</td>
<td>Completion of factor algebras of ideals</td>
<td>205</td>
</tr>
<tr>
<td>Bandle, Catherine and Philippin, Gérard</td>
<td>An inequality for eigenvalues of Sturm-Liouville problems</td>
<td>34</td>
</tr>
<tr>
<td>Beckenstein, Edward and Narici, Lawrence</td>
<td>A nonarchimedean Stone-Banach theorem</td>
<td>242</td>
</tr>
<tr>
<td>Bennett, Grahame</td>
<td>An inequality suggested by Littlewood</td>
<td>474</td>
</tr>
<tr>
<td>Bernstein, Herbert J.</td>
<td>An inequality for selfadjoint operators on a Hilbert space</td>
<td>319</td>
</tr>
<tr>
<td>Binder, Jijí and Navara, Mirko</td>
<td>Quantum logics with lattice state spaces</td>
<td>688</td>
</tr>
<tr>
<td>Birkenmeier, Gary F.</td>
<td>Quotient rings of rings generated by faithful cyclic modules</td>
<td>8</td>
</tr>
<tr>
<td>Blasco, Oscar</td>
<td>Positive $p$-summing operators on $L_p$-spaces</td>
<td>275</td>
</tr>
<tr>
<td>Blei, Ron C.</td>
<td>An elementary proof of the Grothendieck inequality</td>
<td>58</td>
</tr>
<tr>
<td>Brooks, Robert and Waksman, P.</td>
<td>The first eigenvalue of a scalene triangle</td>
<td>175</td>
</tr>
<tr>
<td>Brown, Johnny E.</td>
<td>Level sets for functions convex in one direction</td>
<td>442</td>
</tr>
<tr>
<td>Buczolich, Z.</td>
<td>For every continuous $f$ there is an absolutely continuous $g$ such that $[f = g]$ is not bilaterally strongly porous</td>
<td>485</td>
</tr>
<tr>
<td>Buss, Samuel R.</td>
<td>A conservation result concerning bounded theories and the collection axiom</td>
<td>709</td>
</tr>
<tr>
<td>Chandler, Richard E. and Faulkner, Gary D.</td>
<td>Singular compactifications: The order structure</td>
<td>377</td>
</tr>
<tr>
<td>Chang, K. S., Johnson, G. W. and Skoug, D. L.</td>
<td>Functions in the Fresnel class</td>
<td>309</td>
</tr>
<tr>
<td>Cheung, Wing-Sum.</td>
<td>$C^\infty$-invariants on loop spaces</td>
<td>322</td>
</tr>
<tr>
<td>Chiang, T.-S., Chow, Yunshyong and Lee, Y.-J.</td>
<td>A formula for $E_W \exp(-2^{-1}a^2</td>
<td></td>
</tr>
<tr>
<td>Chinburg, Ted</td>
<td>A small arithmetic hyperbolic three-manifold</td>
<td>140</td>
</tr>
<tr>
<td>Chou, Ching</td>
<td>Ergodic group actions with nonunique invariant means</td>
<td>647</td>
</tr>
<tr>
<td>Chow, Yunshyong</td>
<td>See Chiang, T.-S.</td>
<td></td>
</tr>
<tr>
<td>Collino, Alberto</td>
<td>A simple proof of the theorem of Torelli based on Torelli's approach</td>
<td>16</td>
</tr>
<tr>
<td>Cuesta, Juan A. and Matrán, Carlos</td>
<td>Asymptotic behavior of $p$-predictions for vector valued random variables</td>
<td>716</td>
</tr>
<tr>
<td>Cusick, T. W.</td>
<td>Isolation theorem for products of linear forms</td>
<td>29</td>
</tr>
<tr>
<td>Davis, James F.</td>
<td>Some arithmetic properties of the minimal polynomials of Gauss sums</td>
<td>225</td>
</tr>
<tr>
<td>Debski, W. and Tymchatyn, E. D.</td>
<td>External equivalence classes in decompositions of spaces</td>
<td>781</td>
</tr>
<tr>
<td>Dombrowski, J.</td>
<td>Cyclic operators, commutators, and absolutely continuous measures</td>
<td>457</td>
</tr>
<tr>
<td>Dotzel, Ronald M.</td>
<td>Orientation preserving actions of finite Abelian groups on spheres</td>
<td>159</td>
</tr>
<tr>
<td>Droms, Carl</td>
<td>Isomorphisms of graph groups</td>
<td>407</td>
</tr>
<tr>
<td>Du, Bau-Sen.</td>
<td>Minimal periodic orbits and topological entropy of interval maps</td>
<td>482</td>
</tr>
<tr>
<td>Evans, M. J.</td>
<td>Two-generator groups with perfect Frattini subgroups</td>
<td>25</td>
</tr>
<tr>
<td>Fan, Paul S.</td>
<td>A note on pushing up</td>
<td>11</td>
</tr>
</tbody>
</table>
Faridi, Abbas M. and Schucking, E. L. 
Geodesics and deformed spheres, 522.

Faulkner, Gary D. 
See Chandler, Richard E.

Feldman, William. 
Operators on Banach lattices and the Radon-Nikodým Theorem, 517.

Fenton, P. C. 
On the restricted mean value property, 477.

Franek, F. 
See Balcar, B.

Gethner, Robert M. and Shapiro, Joel H. 
Universal vectors for operators on spaces of holomorphic functions, 281.

Gill, Jelena B. 
Measurable approximation of a second-order process, 535.

Godbole, Anant P. 
On the strong law of large numbers in Banach spaces, 543.

Goldberg, Vladislav V. 
Nonisoclinic 2-codimensional 4-webs of maximum 2-rank, 701.

Gong, Weibang. 
A simple proof of an extension of the Fuglede-Putnam theorem, 599.

Grispolakis, J. and Tymchatyn, E. D. 
On a characterization of W-sets and the dimension of hyperspaces, 557.

Gruenhage, Gary. 
A note on Gulko compact spaces, 371.

Harmon, Dennis R. 
$NK_1$ of finite groups, 229.

Harriss, Gary and Martin, Clyde. 
The roots of a polynomial vary continuously as a function of the coefficients, 390.

Harte, Robin. 
Almost exactness in normed spaces, 257.

Haydon, Richard. 
An unconditionnal result about Grothendieck spaces, 511.

Haydon, Richard, Levy, Mireille and Odell, Edward. 
On sequences without weak* convergent convex block subsequences, 94.

Heltai, Blaise. 
Symmetric Riemann surfaces, torsion subgroups, and Schottky coverings, 675.

Herrero, Domingo A. 
A dense set of operators quasisimilar to normal + compact, 641.

Hiller, Howard and Smith, Larry. 
On the realization and classification of cyclic extensions of polynomial algebras over the Steenrod algebra, 731.

Hochwald, Scott H. and Morrel, Bernard B. 
Some consequences of left invertibility, 109.

Holub, James R. 
Daugavet's equation and operators on $L^1(\mu)$, 295.

Howie, James. 
Two-relator groups with prescribed cohomological dimension, 393.

Illes, Alejandro. 
A continuum $X$ which is a retract of $C(X)$ but not of $2^X$, 199.

Ishii, Hitoshi. 
A simple, direct proof of uniqueness for solutions of the Hamilton-Jacobi equations of eikonal type, 247.

Iwaniec, T. 
Stability property of Möbius mappings, 61.

Izuchi, Keiji and Ohno, Shûichi. 
Restricted left invertible Toeplitz operators on multiply connected domains, 127.

Isbell, John. 
A distinguishing example in $k$-spaces, 593.

Ishi, Hitoshi. 
A simple, direct proof of uniqueness for solutions of the Hamilton-Jacobi equations of eikonal type, 247.

Isiwata, Takesi. 
Metrization of additive $\kappa$-metric spaces, 164.

Iwaniec, T. 
Stability property of Möbius mappings, 61.

Izuchi, Keiji and Ohno, Shûichi. 
Restricted left invertible Toeplitz operators on multiply connected domains, 127.

Janos, Ludvik. 
See Williamson, Robert.

Johnson, Charles R. 
Interlacing polynomials, 401.

Johnson, G. W. 
See Chang, K. S.

Johnson, Russell A. 
Remarks on linear differential systems with measurable coefficients, 491.

Johnston, Bernard. 
The existence of minimal regular local overrings for an arbitrary domain, 419.

Ke, Hu and Xinhan, Dong. 
The asymptotic behavior of univalent functions, 75.

Keating, M. E. 

Khan, M. Ali and Papageorgiou, Nikolaos S. 
On Cournot-Nash equilibria in generalized qualitative games with an atomsless measure space of agents, 505.

Kidwell, Mark E. 

Knight, Ronald A. 
Minimal sets in recurrent discrete flows, 195.

Kulenovič, M. R. S., Ladas, G. and Meimaridou, A. 

Ladas, G. 
See Kulenovič, M. R. S.

Laver, Richard. 
Random reals and Souslin trees, 531.

Lavrić, Boris. 
A note on order complete $f$-algebras, 414.

Lazarow, Ewa. 
On the Baire class of $L$-approximate derivatives, 669.

Leckband, Mark. 
A note on the spherical maximal operator for radial functions, 635.
INDEX TO VOLUME 100

Lee, Y.-J. See Chiang, T.-S.
Lewandowski, Maciej and Żak, Tomasz. On the density of the distribution of p-stable semi-norms, 0 < p < 1, 345.
Lieberman, Gary M. A generalization of the flat cone condition for regularity of solutions of elliptic equations, 289.
Liem, Vo Thanh. Some homotopy properties of the homeomorphism groups of $R^\infty(Q^\infty)$-manifolds, 169.
Lindström, Bernt. A reduction of algebraic representations of matroids, 388.
Lipson, A. S. See Lickorish, W. B. R.
Lucchetti, R., Papageorgiou, N. S. and Patrone, F. Convergence and approximation results for measurable multifunctions, 551.
Mahfoud, W. E. Boundedness properties in Volterra integrodifferential systems, 37.
Martin, Clyde. See Harris, Gary.
Matrán, Carlos. See Cuesta, Juan A.
Matsuda, Hiroo. On n-dimensional Lorentz manifolds admitting an isometry group of dimension $n(n-1)/2 + 1$, 329.
Mehta, R. D. and Vasavada, M. H. Algebra direct sum decomposition of $C_R(X)$. II, 123.
Meimaridou, A. See Kulinović, M. R. S.
Meril, Alex and Struppa, Daniele C. Convolution equations in spaces of distributions supported by cones, 70.
Michael, E. Correction to "A note on completely metrizable spaces", 204.
Moore, Charles N. The corona theorem for domains whose boundary lies in a smooth curve, 266.
Morava, Jack and Tamanoi, Hirotaka. A vanishing theorem for the conformal anomaly in dimension $> 2$, 767.
Morgan, John C., II and Schilling, Kenneth. Invariance under operation $A$, 651.
Moriyoshi, Hitoishi. Positive scalar curvature and KO-characteristic numbers, 585.
Morrel, Bernard B. See Hochwald, Scott H.
Myers, Jan. Representations of infinite permutations by words, 237.
Nadler, Sam B., Jr. Induced universal maps and some hyperspaces with the fixed point property, 749.
Nakazi, Takahiko. See Inoue, Jyunji.
Narici, Lawrence. See Beckenstein, Edward.
Nashier, Budh. On choosing generating sets for ideals, 233.
Navara, Mirko. See Binder, Jiří
Neeman, Amnon. A weak GAGA statement for arbitrary morphisms, 429.
Nerurkar, Mahesh G. Recurrent-proximal linear differential systems with almost periodic coefficients, 739.
Neuendorf, Frank. On the relation between the semigroup and its infinitesimal generator, 104.
Newelski, Ludomir, Pawlikowski, Janusz and Seredyński, Witold. Infinite free set for small measure set mappings, 335.
Nongxa, Loyiso G. *pure subgroups of completely decomposable abelian groups, 613.
Odell, Edward. See Haydon, Richard
Oharu, Shinnosuke and Takahashi, Tadayasu. Locally Lipschitz continuous perturbations of linear dissipative operators and nonlinear semiflows, 187.
Ohno, Shûichi. See Iizuka, Keiji.
O'Meara, K. C. Embedding countable rings in 2-generator rings, 21.
Papageorgiou, N. S. See Lucchetti, R.
Papageorgiou, Nikolaos S. See Khan, M. Ali.
Patrone, F. See Lucchetti, R.
Pawlikowski, Janusz. See Newelski, Ludomir.
Peletier, L. A. and Serrin, J. Ground states for the prescribed mean curvature equation, 694.
INDEX TO VOLUME 100

Pheidas, Thanases.  An undecidability result for power series rings of positive characteristic. II, 526.

Philippin, Gérard.  See Bandle, Catherine.

Pickrell, Doug.  On the support of quasi-invariant measures on infinite-dimensional Grassmann manifolds, 111.

Popenda, Jerzy.  One expression for the solutions of second order difference equations, 87.

Porta, Horacio and Recht, Lázaro.  Minimality of geodesics in Grassmann manifolds, 464.

Przytycki, Józef H. and Traczyk, Pawel.  Conway algebras and skein equivalence of links, 744.

Qi, Sun and Daqing, Wan.  On the solvability of the equation \( \sum_{i=1}^{n} \frac{x_i}{d_i} \equiv 0 \pmod{1} \) and its application, 220.

Quigg, John C.  On biduals of \( C^* \)-tensor products, 666.

Recht, Lázaro.  See Porta, Horacio.

Redlin, Lothar and Watson, Saleem.  Maximal ideals in subalgebras of \( C(X) \), 763.

Repetto, Dušan.  A criterion for cellularity in a topological 4-manifold, 564.

Sakai, Katsuro.  The \( l_1 \)-completion of a metric combinatorial \( \infty \)-manifold, 574.

Sarkaria, K. S.  Embedding and unknottmg of some polyhedra, 201.


Scharlemann, Martin.  The Thurston norm and 2-handle addition, 362.

Shilling, Kenneth.  See Morgan, John C. II

Schucking, E. L.  See Faridi, Abbas M.

Shapiro, Joel H.  Compact composition operators on spaces of boundary-regular holomorphic functions, 49.

Siderov, Plamen N.  Group algebras and algebras of Golod-Shafarevich, 424.

Sine, Robert.  On the converse of the nonexpansive map fixed point theorem for Hilbert space, 489.

Skoug, D. L.  See Chang, K. S.


Sogge, Christopher D.  On the almost everywhere convergence to \( L^p \) data for higher order hyperbolic operators, 99.

Soma, Teruhiko.  On preimage knots in \( S^3 \), 589.

Stong, Robert and Yoshida, Toshio.  Wu classes, 352.

Struppa, Daniele C.  See Meril, Alex.

Tada, Toshimasa.  Picard dimensions of close to rotationally invariant densities, 467.

Takeuchi, Nobuko.  A closed surface of genus one in \( E^3 \) cannot contain seven circles through each point, 145.

Tan, Delin.  On the dilatation estimates for Beurling-Ahlfors quasiconformal extension, 655.

Taylor, J. C.  Minimal functions, martingales and Brownian motion on a noncompact symmetric space, 725.
Traczyk, Paweł. See Przytycki, Józef H.

Tymchatyn, E. D. See Grisolakis, J.

Vasavada, M. H. See Mehta, R. D.

Vukman, J. Some functional equations in Banach algebras and in application, 133.

Waksman, Peter. See Brooks, Robert.

Watson, Saleem. See Redlin, Lothar.

Williamson, Robert and Janos, Ludvik. Constructing metrics with the Heine-Borel property, 567.

Winter, David J. The structure of cyclic Lie algebras, 213.


Wright, David J. Cubic character sums of cubic polynomials, 409.

Xinhan, Dong. See Ke, Hu.

Yoshida, Toshio. See Stong, Robert.

Yoshihara, Hisao. Rational curve with one cusp. II, 405.

Young, Robert M. On the stability of exponential bases in $L^2(-\pi, \pi)$, 117.

Żak, Tomasz. See Lewandowski, Maciej.

Zamfirescu, Tudor. How many sets are porous?, 383.
Manuscript Information

1. Articles submitted for publication should be typewritten, double spaced, and no more than 15 (8 1/2" x 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. To encourage the submission of manuscripts in electronic form using \TeX and the AMS-\TeX macro package, the Executive Committee of the Council has adopted a policy that allows for accelerating the publication date of such manuscripts by as much as 20 weeks, which is approximately equal to the time normally needed by the Society for copyediting, typesetting, and proofreading an average manuscript.

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 (1985 Revision) 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 subject index of Mathematical Reviews, published with the December issue starting in 1984.

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.

OFFPRINTS AND ADDRESS CHANGES. Any inquiries concerning a paper which has been accepted for publication, including information regarding offprints 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 on the original manuscript 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 per page to help defray the cost of publication. The 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 his paper for publication dependent upon payment of the page charge.

BACKLOG. 150 pages. Papers currently being accepted by the editors will be published in 9-11 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 fee of $1.00 plus $0.25 per page for each copy be paid directly to 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 promotion 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 classification from the 1980 Mathematics Subject Classification (1985 Revision) 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

COMBINATORICS, COMPUTER SCIENCE AND INFORMATION THEORY (05 68 94)
Andrew Odlyzko, Room 2C-370, Bell Laboratories, Murray Hill, New Jersey 07974

COMMUTATIVE ALGEBRA (06 12 13 14 15 18)
Louis J. Ratliff, Jr., Department of Mathematics, University of California, Riverside, California 92502

GENERAL ALGEBRA (16 17 18 08)
Donald Passman, Department of Mathematics, University of Wisconsin, Madison, Wisconsin 53706

GROUP THEORY (20)
Bhama Srinivasan, Department of Mathematics, University of Illinois, Chicago, Illinois 60680

ALGEBRAIC AND DIFFERENTIAL TOPOLOGY (55 57 58)
Haynes R. Miller, Room 2-237, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139

REAL VARIABLES (26 28 40)
R. Daniel Mauldin, Department of Mathematics, North Texas State University, Denton, Texas 76203

COMPLEX VARIABLES (30 31 32)
Irwin Kra, Department of Mathematics, State University of New York at Stony Brook, Stony Brook, New York 11794

NUMBER THEORY (11)
Larry J. Goldstein, 12520 Prosperity Drive, Suite 340, Silver Spring, Maryland 20904

ORDINARY DIFFERENTIAL EQUATIONS AND DYNAMICAL SYSTEMS (33 34 39 49 58)
Kenneth R. Meyer, Department of Mathematical Sciences, University of Cincinnati, Cincinnati, Ohio 45221-0025

PARTIAL DIFFERENTIAL EQUATIONS (35 49)
Walter Littman, 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)
John B. Conway, Department of Mathematics, Indiana University, Bloomington, Indiana 47405

FUNCTIONAL ANALYSIS AND CONVEXITY (46 52)
William J. Davis, Department of Mathematics, Ohio State University, Columbus, Ohio 43210

LIE GROUPS AND GEOMETRY (22 51 53)
David G. Ebin, Department of Mathematics, State University of New York at Stony Brook, Stony Brook, New York 11794-3651

GENERAL TOPOLOGY (54)
Dennis Burke, Department of Mathematics, Miami University of Ohio, Oxford, Ohio 45056
Doug W. Curtis, Department of Mathematics, Louisiana State University, Baton Rouge, Louisiana 70803

PROBABILITY AND CERTAIN OTHER FIELDS (60-94 inclusive)
William D. Sudderth, Department of Statistics, University of Minnesota, Minneapolis, Minnesota 55455
Daniel W. Stroock, Department of Mathematics, Room 2-272, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139

All other communications should be addressed to the Managing Editor, Paul S. Muhly, at the above address.

ABCDEFHGHJ-8987
CONTENTS—Continued from back cover

Conway algebras and skein equivalence of links. By JÓZEF H. PRZYTYCKI and PAWEL TRACZYK .......................................................... 744
Induced universal maps and some hyperspaces with the fixed point property. By SAM B. NADLER, JR. .................................................. 749
On the degree of the Brandt-Lickorish-Millett-Ho polynomial of a link. By MARK E. KIDWELL .................................................. 755
Maximal ideals in subalgebras of $C(X)$. By LOTHAR REDLIN and SALEEM WATSON .................................................. 763
A vanishing theorem for the conformal anomaly in dimension $>2$. By JACK MORAVA and HIROTAKA TAMANOI .................................................. 767
A $Q$-manifold local-compactification of a metric combinatorial $\infty$-manifold. By KATSURO SAKAI .................................................. 775
External equivalence classes in decompositions of spaces. By W. DEBSKI and E. D. TYMCHATYN .................................................. 781
Index to Volume 100 ................................................................ 785
CONTENTS

Vol. 100, No. 4  August 1987  Whole No. 338

A. ALGEBRA AND NUMBER THEORY

The noncompact hyperbolic 3-manifold of minimal volume.  By COLIN C. ADAMS ....... 601
Liouvillian solutions of the differential equation $y'' + S(x)y = 0$ with $S(x)$ binomial.  By
MINORU SETOYANAGI .................................................. 607
*$p$-pure subgroups of completely decomposable abelian groups.  By LOYISO G. NONGXA 613
On the purely inseparable closure of rings.  By SHIZUKA SATO ................................ 619
Simple exceptional 16-dimensional Jordan triple systems.  By THOMAS J. E. SCHWARZ 623

B. ANALYSIS

Zeros of successive derivate of a class of real entire functions of exponential type.  By
LI-CHIEN SHEN ...................................................... 627
A note on the spherical maximal operator for radial functions.  By MARK LECKBAND .... 635
A dense set of operators quasisimilar to normal + compact.  By DOMINGO A. HERRERO 641
Ergodic group actions with nonunique invariant means.  By CHING CHOU ............. 647
Invariance under operation $A$.  By JOHN C. MORGAN II and KENNETH SCHILLING .... 651
On the dilatation estimates for Beurling-Ahlfors quasiconformal extension.  By DELIN
TAN ................................................................. 655
Convexity and Banach envelope of the weak-$L_p$ spaces.  By MIGUEL A. ARINO ...... 661
On biduals of $C^*$-tensor products.  By JOHN C. QUIGG .................................... 666
On the Baire class of $J$-approximate derivatives.  By EWA LAZAROW .................. 669
Symmetric Riemann surfaces, torsion subgroups, and Schottky coverings.  By BLAISE
HELTAI ............................................................... 675
On quasi-affine transforms of unilateral shifts.  By KATSUTOSHI TAKAHASHI ....... 683

C. APPLIED MATHEMATICS

Quantum logics with lattice state spaces.  By JIRÍ BINDER and MIRKO NAVARA ....... 688

D. GEOMETRY

Ground states for the prescribed mean curvature equation.  By L. A. PELETIER and J.
SERRIN ............................................................. 694
Nonisoclinic 2-codimensional 4-webs of maximum 2-rank.  By VLADISLAV V. GOLDBERG 701

E. LOGIC AND FOUNDATIONS

A conservation result concerning bounded theories and the collection axiom.  By SAM-
UEL R. BUSS ....................................................... 709

F. STATISTICS AND PROBABILITY

Asymptotic behavior of $p$-predictions for vector valued random variables.  By JUAN A.
CUESTA and CARLOS MATRÁN ........................................ 716
A formula for $E_W \exp(-2^{-1}a^2 \|x+y\|_{2}^2)$.  By TZUU-SHUH CHIANG, YUNSHYONG CHOW
and YUH-JIA LEE .................................................... 721
Minimal functions, martingales and Brownian motion on a noncompact symmetric space.
By J. C. TAYLOR ........................................................ 725

G. TOPOLOGY

On the realization and classification of cyclic extensions of polynomial algebras over the
Steenrod algebra.  By HOWARD HILLER and LARRY SMITH .......................... 731
Recurrent-proximal linear differential systems with almost periodic coefficients.  By MA-
HESH G. NERURKAR .................................................. 739

(Continued on inside back cover)