INDEX TO VOLUME 326
July–August 1991

Adams, Colin, Hildebrand, Martin and Weeks, Jeffrey. Hyperbolic invariants of knots and links, 1.
Andersen, Kenneth F. Weighted inequalities for maximal functions associated with general measures, 907.
Bendersky, Martin and Gitler, Sam. The cohomology of certain function spaces, 423.
Benzinger, Harold E. Plane autonomous systems with rational vector fields, 465.
Bergvelt, M. J. and Guest, M. A. Actions of loop groups on harmonic maps, 861.
Coffman, Charles V. Classification of balanced sets and critical points of even functions on spheres, 727.
Conway, John B. Towards a functional calculus for subnormal tuples: The minimal normal extension, 543.
Dancer, E. N. On the existence and uniqueness of positive solutions for competing species models with diffusion, 829.
Ditzian, Z. A measure of smoothness related to the Laplacian, 407.
Downey, Rodney G. and Moses, Michael F. Recursive linear orders with incomplete successivities, 653.
Edjvet, Martin and Howie, James. The solution of length four equations over groups, 345.
Evans, Michael J., Humke, Paul D., Lee, Cheng-Ming and O'Malley, Richard J. Characterizations of turbulent one-dimensional mappings via ω-limit sets, 261.
Fiddelaers, Peter. See Dumortier, Freddy
Fiedorowicz, Zbigniew and Loday, Jean-Louis. Crossed simplicial groups and their associated homology, 57.
Gallego, E. and Reventós, A. Lie flows of codimension 3, 529.
Gitler, Sam. See Bendersky, Martin
Guest, M. A. See Bergvelt, M. J.
Hildebrand, Martin. See Adams, Colin
Holzmann, W. H. An equivariant torus theorem for involutions, 887.
Howie, James. See Edjvet, Martin
Humke, Paul D. See Evans, Michael J.
Hurley, Mike. Varieties of periodic attractor in cellular automata, 701.
Iozzi, Alessandra. Algebraic hulls and smooth orbit equivalence, 371.
Kennedy, Judy. A transitive homeomorphism on the pseudoarc which is semiconjugate to the tent map, 773.
Klassen, Eric Paul. Representations of knot groups in SU(2), 795.
Krawczyk, Adam and Zakrzewski, Piotr. Extensions of measures invariant under countable groups of transformations, 211.
Lee, Cheng-Ming. See Evans, Michael J.
Loday, Jean-Louis. See Fiedorowicz, Zbigniew
McConnell, Terry R. The two-sided Stefan problem with a spatially dependent latent heat, 669.
Marcoux, Laurent. On the distance between unitary orbits of weighted shifts, 583.
Moses, Michael F. See Downey, Rodney G.
INDEX TO VOLUME 326

Murasugi, Kunio. On the braid index of alternating links, 237.
Olafsson, G. and Ørsted, B. The holomorphic discrete series of an affine symmetric space and representations with reproducing kernels, 385.
O'Malley, Richard J. See Evans, Michael J.
Ørsted, B. See Olafsson, G.
Pejsachowicz, Jacobo. See Fitzpatrick, P. M.
Pillay, Anand. See Nesin, Ali
Rabau, Patrick. Action on Grassmannians associated with a field extension, 127.
———. See Kim, Dae San
Rădulescu, Florin. Vanishing of $H^2_0(M, K(H))$ for certain finite von Neumann algebras, 569.
Reventós, A. See Gallego, E.
Robson, Robert O. Separating points from closed convex sets over ordered fields and a metric for $\mathbb{R}^n$, 89.
Shen, Yuan-Yuan. Unit groups and class numbers of real cyclic octic fields, 179.
Simis, Aron. See Bruns, Winfried
Sommen, F. Monogenic differential calculus, 613.
Tarantello, Gabriella. Remarks on forced equations of the double pendulum type, 441.
Trung, Ngô Viêt. See Bruns, Winfried
van de Vel, M. Invariant arcs, Whitney levels, and Kelley continua, 749.
Waner, Stefan. See Costenoble, Steven R.
Weeks, Jeffrey. See Adams, Colin
Zakrzewski, Piotr. See Krawczyk, Adam
Zdunik, Anna. Harmonic measure versus Hausdorff measures on repellers for holomorphic maps, 633.
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 a chapter 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 Manager of Editorial Services, American Mathematical Society, P.O. Box 6248, Providence, Rhode Island 02940-6248.

The owner consents to copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law, provided that a fee of $1.00 plus $.25 per page for each copy be paid directly to the Copyright Clearance Center, Inc., 27 Congress Street, Salem, Massachusetts 01970. When paying this fee please use the code 0002-9947/91 to refer to this publication. 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.

Copyright ©1991 by the American Mathematical Society. All rights reserved.
Printed in the United States of America
The American Mathematical Society retains all rights except those granted to the United States Government.
The paper used in this book is acid-free and falls within the guidelines established to ensure permanence and durability.
Hyperbolic invariants of knots and links
By Colin Adams, Martin Hildebrand and Jeffrey Weeks........ 1

Crossed simplicial groups and their associated homology
By Zbigniew Fiedorowicz and Jean-Louis Loday............ 57

Separating points from closed convex sets over ordered fields and a metric
for \( \tilde{R}^n \)
By Robert O. Robson ........................................ 89

Quadratic models for generic local 3-parameter bifurcations on the plane
By Freddy Dumortier and Peter Fiddelaers.............. 101

Action on Grassmannians associated with a field extension
By Patrick Rabau........................................... 127

Action on Grassmannians associated with commutative semisimple algebras
By Dae San Kim and Patrick Rabau ....................... 157

Unit groups and class numbers of real cyclic octic fields
By Yuan-Yuan Shen....................................... 179

Extensions of measures invariant under countable groups of transformations
By Adam Krawczyk and Piotr Zakrzewski................. 211

Brownian motion in a wedge with variable skew reflection
By L. C. G. Rogers....................................... 227

On the braid index of alternating links
By Kunio Murasugi....................................... 237

Characterizations of turbulent one-dimensional mappings via \( \omega \)-limit sets
By Michael J. Evans, Paul D. Humke, Cheng-Ming Lee and
Richard J. O'Malley........................................ 261

Parity and generalized multiplicity
By P. M. Fitzpatrick and Jacobo Pejsachowicz........ 281

Cyclic Galois extensions and normal bases
By C. Greither............................................. 307

The solution of length four equations over groups
By Martin Edjvet and James Howie......................... 345

Algebraic hulls and smooth orbit equivalence
By Alessandra Iozzi..................................... 371
The holomorphic discrete series of an affine symmetric space and representations with reproducing kernels
By G. Ólafsson and B. Ørsted ............................................. 385
A measure of smoothness related to the Laplacian
By Z. Ditzian ................................................................. 407
The cohomology of certain function spaces
By Martin Bendersky and Sam Gitler ................................. 423
Remarks on forced equations of the double pendulum type
By Gabriella Tarantello .................................................. 441
Some model theory of compact Lie groups
By Ali Nesin and Anand Pillay .......................................... 453

Vol. 326, No. 2 August 1991 Whole No. 675

Plane autonomous systems with rational vector fields
By Harold E. Benzinger .................................................... 465
Fixed set systems of equivariant infinite loop spaces
By Steven R. Costenoble and Stefan Waner ........................ 485
Blow-up of straightening-closed ideals in ordinal Hodge algebras
By Winfried Bruns, Aron Simis and Ngô Viêt Trung .............. 509
Lie flows of codimension 3
By E. Gallego and A. Reventós ........................................ 529
Towards a functional calculus for subnormal tuples: The minimal normal extension
By John B. Conway ....................................................... 543
Vanishing of $H^2(M,K(H))$ for certain finite von Neumann algebras
By Florin Rădulescu ..................................................... 569
On the distance between unitary orbits of weighted shifts
By Laurent Marcoux ...................................................... 585
Monogenic differential calculus
By F. Sommen ............................................................. 613
Harmonic measure versus Hausdorff measures on repellers for holomorphic maps
By Anna Zdunik .......................................................... 633
Recursive linear orders with incomplete successivities
By Rodney G. Downey and Michael F. Moses ....................... 653
The two-sided Stefan problem with a spatially dependent latent heat
By Terry R. McConnell .................................................. 669
Varieties of periodic attractor in cellular automata
By Mike Hurley ............................................. 701
Classification of balanced sets and critical points of even functions on spheres
By Charles V. Coffman ........................................... 727
Invariant arcs, Whitney levels, and Kelley continua
By M. van de Vel ................................................ 749
A transitive homeomorphism on the pseudoarc which is semiconjugate to the tent map
By Judy Kennedy .................................................. 773
Representations of knot groups in SU(2)
By Eric Paul Klassen ........................................... 795
On the existence and uniqueness of positive solutions for competing species models with diffusion
By E. N. Dancer .................................................... 829
Actions of loop groups on harmonic maps
By M. J. Bergvelt and M. A. Guest ............................ 861
An equivariant torus theorem for involutions
By W. H. Holzmann ............................................... 887
Weighted inequalities for maximal functions associated with general measures
By Kenneth F. Andersen ......................................... 907
MEMOIRS OF THE AMERICAN MATHEMATICAL SOCIETY

This bimonthly journal is devoted to research in pure and applied mathematics of much the same nature as appears in TRANSACTIONS. An issue consists of one or more separately bound research tracts for which the author(s) has provided reproduction copy. Prior to 1975 this was published as a monograph series. The editorial committee is identical with that for the TRANSACTIONS so that papers intended for publication in this series should be addressed to one of the editors.

SUBMISSION OF MANUSCRIPT

Two copies of mathematical papers intended for publication in the TRANSACTIONS or the MEMOIRS should be addressed to one of the editors. Subjects, and the editors associated with them, follow.

Harmonic analysis, representation theory, and Lie theory to AVNER D. ASH, Department of Mathematics, The Ohio State University, 231 West 18th Avenue, Columbus, OH 43210

Abstract analysis to MASAMICHI TAKESAKI, Department of Mathematics, University of California, Los Angeles, CA 90024

Real and harmonic analysis to DAVID JERISON, Department of Mathematics, Room 2-180, Massachusetts Institute of Technology, Cambridge, MA 02139

Algebra and algebraic geometry to JUDITH D. SALLY, Department of Mathematics, Northwestern University, Evanston, IL 60208

Geometric topology and general topology to JAMES W. CANNON, Department of Mathematics, Brigham Young University, Provo, UT 84602

Algebraic topology and differential topology to RALPH COHEN, Department of Mathematics, Stanford University, Stanford, CA 94305

Ordinary differential equations, partial differential equations, and applied mathematics to ROGER D. NUSSBAUM, Department of Mathematics, Rutgers University, New Brunswick, NJ 08903

Global analysis and differential geometry to JERRY L. KAZDAN, Department of Mathematics, University of Pennsylvania, El, Philadelphia, PA 19104-6395

Probability and statistics to RICHARD DURRETT, Department of Mathematics, Cornell University, Ithaca, NY 14853-7901

Combinatorics and number theory to CARL POMERANCE, Department of Mathematics, University of Georgia, Athens, GA 30602

Logic, set theory, general topology, and universal algebra to JAMES E. BAUMGARTNER, Department of Mathematics, Dartmouth College, Hanover, NH 03755

Algebraic number theory, analytic number theory, and modular forms to AUDREY TERRAS, Department of Mathematics, University of California at San Diego, La Jolla, CA 92093

Complex analysis and nonlinear partial differential equations to SUN-YUNG A. CHANG, Department of Mathematics, University of California, Los Angeles, CA 90024

All other communications to the editors should be addressed to the Managing Editor, DAVID J. SALTMAN, Department of Mathematics, University of Texas at Austin, Austin, TX 78713

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 acknowledgment 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 Manager of Editorial Services, American Mathematical Society, P.O. Box 6248, Providence, Rhode Island 02940-6248.

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 $.25 per page for each copy be paid directly to the Copyright Clearance Center, Inc., 27 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.
(Continued from back cover)

On the existence and uniqueness of positive solutions for competing species models with diffusion
By E. N. Dancer .......................................................... 829

Actions of loop groups on harmonic maps
By M. J. Bergvelt and M. A. Guest ................................. 861

An equivariant torus theorem for involutions
By W. H. Holzmann ...................................................... 887

Weighted inequalities for maximal functions associated with general measures
By Kenneth F. Andersen .................................................. 907
<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plane autonomous systems with rational vector fields</td>
<td>Harold E. Benzinger</td>
<td>465</td>
</tr>
<tr>
<td>Fixed set systems of equivariant infinite loop spaces</td>
<td>Steven R. Costenoble and Stefan Waner</td>
<td>485</td>
</tr>
<tr>
<td>Blow-up of straightening-closed ideals in ordinal Hodge algebras</td>
<td>Winfried Bruns, Aron Simis and Ngô Viêt Trung</td>
<td>509</td>
</tr>
<tr>
<td>Lie flows of codimension 3</td>
<td>E. Gallego and A. Reventós</td>
<td>529</td>
</tr>
<tr>
<td>Towards a functional calculus for subnormal tuples: The minimal normal extension</td>
<td>John B. Conway</td>
<td>543</td>
</tr>
<tr>
<td>Vanishing of $H^{\sigma}_0(M,K(H))$ for certain finite von Neumann algebras</td>
<td>Florin Rădulescu</td>
<td>569</td>
</tr>
<tr>
<td>On the distance between unitary orbits of weighted shifts</td>
<td>Laurent Marcoux</td>
<td>585</td>
</tr>
<tr>
<td>Monogenic differential calculus</td>
<td>F. Sommen</td>
<td>613</td>
</tr>
<tr>
<td>Harmonic measure versus Hausdorff measures on repellers for holomorphic maps</td>
<td>Anna Zdunik</td>
<td>633</td>
</tr>
<tr>
<td>Recursive linear orders with incomplete successivities</td>
<td>Rodney G. Downey and Michael F. Moses</td>
<td>653</td>
</tr>
<tr>
<td>The two-sided Stefan problem with a spatially dependent latent heat</td>
<td>Terry R. McConnell</td>
<td>669</td>
</tr>
<tr>
<td>Varieties of periodic attractor in cellular automata</td>
<td>Mike Hurley</td>
<td>701</td>
</tr>
<tr>
<td>Classification of balanced sets and critical points of even functions on spheres</td>
<td>Charles V. Coffman</td>
<td>727</td>
</tr>
<tr>
<td>Invariant arcs, Whitney levels, and Kelley continua</td>
<td>M. van de Vel</td>
<td>749</td>
</tr>
<tr>
<td>A transitive homeomorphism on the pseudoarc which is semiconjugate to the tent map</td>
<td>Judy Kennedy</td>
<td>773</td>
</tr>
<tr>
<td>Representations of knot groups in SU(2)</td>
<td>Eric Paul Klassen</td>
<td>795</td>
</tr>
</tbody>
</table>

(Continued on inside back cover)