## Pacific

## Journal of

 Mathematics
## VOLUME CX <br> 1984

# PACIFIC JOURNAL OF MATHEMATICS <br> EDITORS 

| Donald Babbitt (Managing Editor) | J. Dugundir |
| :--- | :--- |
| University of California | Department of Mathematics |
| Los Angeles, CA 90024 | University of Southern California |
| HUGo Rossi | Los Angeles, CA 90089-1113 |
| University of Utah | R. Finn and H. SAmeLson |
| Salt Lake City, UT 84112 | Stanford University |
| C. C. Moore and Arthur Ogus | Stanford, CA 94305 |
| University of California |  |
| Berkeley, CA 94720 |  |

ASSOCIATE EDITORS

| R. Arens | E. F. Beckenbach |  |  |
| :--- | :---: | :---: | :---: | :---: |
| $(1906-1982)$ | B. H. Neumann | F. Wolf | K. Yoshida |

## SUPPORTING INSTITUTIONS

UNIVERSITY OF ARIZONA
UNIVERSITY OF BRITISH COLUMBIA CALIFORNIA INSTITUTE OF TECHNOLOGY UNIVERSITY OF CALIFORNIA MONTANA STATE UNIVERSITY UNIVERSITY OF NEVADA, RENO NEW MEXICO STATE UNIVERSITY OREGON STATE UNIVERSITY

UNIVERSITY OF OREGON
UNIVERSITY OF SOUTHERN CALIFORNIA STANFORD UNIVERSITY UNIVERSITY OF HAWAII UNIVERSITY OF TOKYO UNIVERSITY OF UTAH WASHINGTON STATE UNIVERSITY UNIVERSITY OF WASHINGTON

## CONTENTS

A - ALGEBRA AND NUMBER THEORY
M. Baica, An algorithm in a complex field and its application to the calculation of units ..... 21
R. J. Evans, Determinations of Jacobsthal sums ..... 49
D. Shelstad, Endoscopic groups and base change $\mathbf{C} / \mathbf{R}$ ..... 397
B - ANALYSIS
W. Abramczuk, A class of surjective convolution operators ..... 1
K. Adachi, Extending bounded holomorphic functions from certain subvarieties of a weakly pseudoconvex domain ..... 9
R. A. Bekes, The range of convolution operators ..... 257
G. Emmanuele, A remark on a paper of Kuhfittig ..... 283
I. Erdelyi and W. Shengwang, On strongly decomposable operators ..... 287
N. Ghoussoub and P. Saab, Weak compactness in spaces of Bochner integrable functions and the Radon-Nikodym property ..... 65
G. Gierz, Injective Banach lattices with strong order units ..... 297
J. G. Gil, On local convexity of bounded weak topologies on Banach spaces ..... 71
M. Hara, On Gamelin constants ..... 77
W. Hauenschild, E. Kaniuth and A. Kumar, Harmonic analysis on central hypergroups and induced representations ..... 83
E. Hernández, An interpolation theorem for analytic families of operators acting on certain $H^{p}$ spaces ..... 113
E. Kaniuth, See W. Hauenschild, E. Kaniuth and A. Kumar
T. A. Keagy, On "Tauberian theorems via block dominated ma- trices" ..... 119
A. Kumar, See W. Hauenschild, E. Kaniuth and A. Kumar
T. Landes, Permanence properties of normal structure ..... 125
D. Luecking, Closed ranged restriction operators on weighted Berg- man spaces ..... 145
P. H. Maserick and F. H. Szafraniec, Equivalent definitions of posi- tive definiteness ..... 315
G. J. Murphy, Hyperinvariant subspaces and the topology on Lat $A$ ..... 183
S. Nag, On the holomorphy of maps from a complex to a real mani- fold ..... 191
C. Peligrad and S. Rubinstein, Maximal subalgebras of $C^{*}$-crossed products ..... 325
D. W. Robinson and S. Yamamuro, Hereditary cones, order ideals and half-norms ..... 335
D. W. Robinson and S. Yamamuro, The Jordan decomposition and half-norms ..... 345
S. Rubinstein, See C. Peligrad and S. Rubinstein
P. Saab, See N. Ghoussoub and P. Saab
W. Shengwang, See I. Erdelyi and W. Shengwang
A. Sitaram, Some remarks on measures on non-compact semi- simple Lie groups ..... 429
F. H. Szafraniec, See P. H. Maserick and F. H. Szafraniec
H. Weber, Topological Boolean rings. Decomposition of finitely additive set functions ..... 471
S. Yamamuro, See D. W. Robinson and S. Yamamuro
D - GEOMETRY
M. Letizia, Quotients by complex conjugation of nonsingular quad- rics and cubics in $\mathbf{P}_{\mathbf{C}}^{3}$ defined over $\mathbf{R}$ ..... 307
R. Rochberg, Interpolation of Banach spaces and negatively curved vector bundles ..... 355
W. Seaman, Helicoids of constant mean curvature and their Gauss maps ..... 387
W. Whiteley, Infinitesimal motions of a bipartite framework ..... 233
G - TOPOLOGY
D. K. Burke and S. W. Davis, Subsets of ${ }^{\omega} \omega$ and generalized metric spaces ..... 273
S. W. Davis, See D. K. Burke and S. W. Davis
L. Foged, Characterizations of $\aleph$-spaces ..... 59
A. T. Lundell, The p-equivalence of $\mathrm{SO}(2 n+1)$ and $\mathrm{Sp}(n)$ ..... 161
M. D. Meyerson, Remarks on Fenn's "the Table Theorem" and Zaks" "the Chair Theorem" ..... 167
M. V. Mielke, Homotopically trivial toposes ..... 171
D. Rolfsen, Rational surgery calculus: Extension of Kirby's theorem ..... 377
J. Siegel and F. Williams, Numerical invariants of homotopies into spheres ..... 417
T. Soma, Atoroidal, irreducible 3-manifolds and 3-fold branched coverings of $S^{3}$ ..... 435
J. de Vries, On the G-compactification of products ..... 447
J. J. Walsh and D. C. Wilson, Continuous decompositions into cells of different dimensions ..... 223
F. Williams, See J. Siegel and F. WilliamsD. C. Wilson, See J. J. Walsh and D. C. Wilson

## H - COMBINATORICS

G. Bianchi and R. Cori, Colorings of hypermaps and a conjecture of Brenner and Lyndon ..... 41R. Cori, See G. Bianchi and R. CoriE. M. Palmer and R. W. Robinson, Enumeration of self-dual config-urations203
R. W. Robinson, See E. M. Palmer and R. W. Robinson

## Pacific Journal of

## Mathematics

W. Abramczuk, A class of surjective convolution operators ..... 1
K. Adachi, Extending bounded holomorphic functions from certain subvarieties of a weakly pseudoconvex domain ..... 9
M. Baica, An algorithm in a complex field and its application to the calculation of units ..... 21
G. Bianchi and R. Cori, Colorings of hypermaps and a conjecture of Brenner and Lyndon ..... 41
R. J. Evans, Determinations of Jacobsthal sums ..... 49
L. Foged, Characterizations of $\aleph$-spaces ..... 59
N. Ghoussoub and P. Saab, Weak compactness in spaces of Bochner integrable functions and the Radon-Nikodym property ..... 65
J. G. Gil, On local convexity of bounded weak topologies on Banach spaces ..... 71
M. Hara, On Gamelin constants ..... 77
W. Hauenschild, E. Kaniuth and A. Kumar, Harmonic analysis on central hyper- groups and induced representations ..... 83
E. Hernández, An interpolation theorem for analytic families of operators acting on certain $H^{p}$ spaces ..... 113
T. A. Keagy, On "Tauberian theorems via block dominated matrices" ..... 119
T. Landes, Permanence properties of normal structure ..... 125
D. Luecking, Closed ranged restriction operators on weighted Bergman spaces ..... 145
A. T. Lundell, The $p$-equivalence of $\mathrm{SO}(2 n+1)$ and $\mathrm{Sp}(n)$ ..... 161
M. D. Meyerson, Remarks on Fenn's "the Table Theorem" and Zaks' "the Chair Theorem" ..... 167
M. V. Mielke, Homotopically trivial toposes ..... 171
G. J. Murphy, Hyperinvariant subspaces and the topology on Lat $A$ ..... 183
S. Nag, On the holomorphy of maps from a complex to a real manifold ..... 191
E. M. Palmer and R. W. Robinson, Enumeration of self-dual configurations ..... 203
J. J. Walsh and D. C. Wilson, Continuous decompositions into cells of different dimensions ..... 223
W. Whiteley, Infinitesimal motions of a bipartite framework ..... 233

# PACIFIC JOURNAL OF MATHEMATICS EDITORS 

Donald Babbitt (Managing Editor)
University of California
Los Angeles, CA 90024
Hugo Rossi
University of Utah
Salt Lake City, UT 84112
C. C. Moore and Arthur Ogus

University of California
Berkeley, CA 94720

J. Dugundir<br>Department of Mathematics<br>University of Southern California<br>Los Angeles, CA 90089-1113<br>R. Finn and H. Samelson<br>Stanford University<br>Stanford, CA 94305

## ASSOCIATE EDITORS

| R. Arens | E. F. Beckenbach | B. H. Neumann | F. Wolf | K. Yoshida |
| :---: | :---: | :---: | :---: | :---: |

## SUPPORTING INSTITUTIONS

UNIVERSITY OF ARIZONA
UNIVERSITY OF BRITISH COLUMBIA
CALIFORNIA INSTITUTE OF TECHNOLOGY
UNIVERSITY OF CALIFORNIA
MONTANA STATE UNIVERSITY
UNIVERSITY OF NEVADA, RENO
NEW MEXICO STATE UNIVERSITY
OREGON STATE UNIVERSITY

UNIVERSITY OF OREGON UNIVERSITY OF SOUTHERN CALIFORNIA STANFORD UNIVERSITY<br>UNIVERSITY OF HAWAII<br>UNIVERSITY OF TOKYO<br>UNIVERSITY OF UTAH<br>WASHINGTON STATE UNIVERSITY<br>UNIVERSITY OF WASHINGTON

The Supporting Institutions listed above contribute to the cost of publication of this Journal, but they are not owners or publishers and have no responsibility for its content or policies.


#### Abstract

Mathematical papers intended for publication in the Pacific Journal of Mathematics should be in typed form or offset-reproduced (not dittoed), double spaced with large margins. Please do not use built up fractions in the text of the manuscript. However, you may use them in the displayed equations. Underline Greek letters in red, German in green, and script in blue. The first paragraph must be capable of being used separately as a synopsis of the entire paper. In particular it should contain no bibliographic references. Please propose a heading for the odd numbered pages of less than 35 characters. Manuscripts, in triplicate, may be sent to any one of the editors. Please classify according to the scheme of Math. Reviews, Index to Vol. 39. Supply name and address of author to whom proofs should be sent. All other communications should be addressed to the managing editor, or Elaine Barth, University of California, Los Angeles, California 90024.

There are page-charges associated with articles appearing in the Pacific Journal of Mathematics. These charges are expected to be paid by the author's University, Government Agency or Company. If the author or authors do not have access to such Institutional support these charges are waived. Single authors will receive 50 free reprints; joint authors will receive a total of 100 free reprints. Additional copies may be obtained at cost in multiples of 50 .


The Pacific Journal of Mathematics is issued monthly as of January 1966. Regular subscription rate: $\$ 132.00$ a year ( 6 Vol., 12 issues). Special rate: $\$ 66.00$ a year to individual members of supporting institutions.

Subscriptions, orders for numbers issued in the last three calendar years, and changes of address should be sent to Pacific Journal of Mathematics, P.O. Box 969, Carmel Valley, CA 93924, U.S.A. Old back numbers obtainable from Kraus Periodicals Co., Route 100, Millwood, NY 10546.

[^0]PUBLISHED BY PACIFIC JOURNAL OF MATHEMATICS, A NON-PROFIT CORPORATION


[^0]:    The Pacific Journal of Mathematics ISSN 0030-8730 is published monthly by the Pacific Journal of Mathematics at P.O. Box 969, Carmel Valley, CA 93924. Application to mail at Second-class postage rates is pending at Carmel Valley, California, and additional mailing offices. Postmaster: Send address changes to Pacific Journal of Mathematics, P. O. Box 969, Carmel Valley, CA 93924.

