## BULLETIN of the

## AUSTRALIAN MATHEMATICAL SOCIETY

## Volume 36 Number 3

December 1987
On the Kneser-Hukuhara property for integral equations in locally convex spaces
by Stanislaw Szufla ... ... .. .. 353
The Nevanlinna-Pick theorem and a non-positive definitive matrix by Takahiko Nakazi .361
Each weakly countably determined Asplund space admits a Fréchet differentiable norm by M. Fabian ..... 367
An extension of Muntz's theorem in multivariables by Shirô Ogawa and Kazuaki Kitahara ..... 375
How complete are categories of algebras by Jiri Adámek ..... 389
There are no chaotic mappings with residual scrambled sets by T. Gedeon ..... 411
Tensor products of function algebras by Athanasios Kyriazis ..... 417
Estimates for solutions of elliptic equations in a limit case by Ester Giarrusso and Guido Trombetti ..... 425
On the Stone-Cech compactification of an orbit space by Kavita Srivastava. ..... 435
On maximum matchings in cubic graphs with a bounded number of bridge-covering paths by Gary Chartrand, S. F. Kapoor, Ortrud R. Oellerman and Sergio Ruiz ..... 441
On composite polynomials whose zeros are in a half-plane by Abdul Aziz ..... 449
Two remarks on amalgams of locally finite groups by Berthold J. Maier. ..... 461
Examples of expanding maps with some special properties by Bau-Sen Du ..... 469
Modular fitting functors in finite groups by Peter Hauck and Reinhold Kienzle ..... 475
A modified projection method for equations of the second kind by M. Thamban Nair ..... 485
Bounded and relatively bounded sets by Niel Shell ..... 493
A note on additive mappings in noncommutative fields by J. Vukman ..... 499
Going-down underrings
by David E. Dobbs ..... 503
A remark on projective modules by Wojciech Kucharz ..... 515
ABSTRACTS OF AUSTRALASIAN Ph.D. THESES
Extrema of Gaussian process by simulation by Shahaboddin Ghahreman ..... 521
The geometry of nonlinear wave equations in two independent variables: methods for exact solution by Peter John Vassiliou ..... 523
On some reconstruction problems by Richard Taylor ..... 527

# BULLETIN OF THE AUSTRALIAN MATHEMATICAL SOCIETY 

Editors: Sheila Oates-Williams Honorary Editor:

Deputy Editor:
B. H. Neumann
A. S. Jones

## Associate Editors

| Robert S. Anderssen | P. Donovan | D. C. Hunt | Leon Simon |
| :--- | :--- | :--- | :--- |
| Alan L. Andrew | B. J. Gardner | B. D. Jones | Ross Street |
| E. J. Billington | J. R. Giles | P. E. Kloeden | G. Szekeres |
| B. D. Craven | J. R. J. Groves | S. A. Morris | D. G. Tacon |
| Brian A. Davey | J. A. Hempel | G. B. Preston | E. U. Tarafdar |
| Peter G. Dodds | D. A. Holton | J. H. Rubinstein | Colin J. Thompson |

Robert S. Anderssen
P. Donovan
B. D. Jones

Ross Street
J. R. Giles
P. E. Kloeden
G. Szekeres
J. A. J. Groves
G. B. Preston
E. U. Tarafdar
D. A. Holton
J. H. Rubinstein Colin J. Thompson
A. J. van der Poorten

## Assistant Editors

K. G. Smith
G. A. Chandler

## INFORMATION FOR AUTHORS

The BULLETIN of the Australian Mathematical Society aims at quick publication of original research in all branches of mathematics. Timely expository articles are also welcomed.

To ensure speedy publication, editorial decisions on acceptance or otherwise are taken quickly, normally within a month of receipt of the paper. Papers are accepted only after a careful evaluation by the Editor and an Associate Editor or other expert in the field.

As even minor revisions are generally not permitted, authors should read carefully all the details listed below and on the inside back cover.

For a paper to be acceptable for publication, not only should it contain new and interesting results but also
(i) the exposition should be clear and attractive, and
(ii) the manuscript should be in publishable form, without revision.

Nevertheless some meritorious papers will have to be rejected because speed of publication involves space limitations.

Authors should submit THREE clean, high quality copies to
The Editor, Bulletin of the Australian Mathematical Society,
Department of Mathematics, University of Queensland,
St. Lucia, Queensland, 4067, Australia.
Unless requested at the time, material submitted to the BULLETIN will usually not be returned. Note that each paper submitted must include an abstract and one or more classification numbers following the 1980 Mathematics Subject Classification. (1985 Revision).


#### Abstract

PhD Theses The BULLETIN endeavours to publish abstracts of all accepted Australasian PhD theses in mathematics. One restriction, however, is that the abstract must be received by the Editor within 6 months of the degree being approved. (C)Copyright Statement. Where necessary, permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by the Treasurer, Australian Mathematical Publishing Association, Inc., for libraries and other uses registered with the Copyright Clearance Center (CCC). provided that the base fee of SA2.00 per copy of article is paid directly to CCC, 21 Congress Street, Salem, MA 01970, U.S.A. Special requests should be addressed to the Treasurer, Australian Mathematical Publishing Association, Inc., c/- Department of Mathematics, University of Queensland, St. Lucia, Old. 4067, Australia. Serial-fee code: 0004-9727/87 \$A2.00 +0.00


## BULLETIN

## of the

## Australian Mathematical Society

Editor: Sheila Oates-Williams<br>Deputy Editor: A. S. Jones<br>Honorary Editor: B. H. Neumann

Associate Editors
Robert S. Anderssen
Alan L. Andrew
P. Donovan
D. C. Hunt
B. J. Gardner
B. D. Jones

Leon Simon
E. J. Billington
J. R. Giles
P. E. Kloeden

Ross Street
J. R. J. Groves
S. A. Morris
G. Szekeres
B. D. Craven
J. A. Hempel
G. B. Preston
D. G. Tacon

Brian A. Davey
D. A. Holton
J. H. Rubinstein Colin J. Thompson
A. J. van der Poorten N. C. Weber

Assistant Editors

K. G. Smith<br>G. A. Chandler

# VOLUME 36 (1987) 

## Contents

Jiri Adamek, How complete are categories of algebras? ..... 389
V. N. Akis and D. W. Curtis, A characterisation of the absolute quasiretracts in a class of acyclic continua. ..... 227
Abdul Aziz, On composite polynomials whose zeros are in half-plane ..... 449
Nicholas Billington, The growth of stratfied groups [A] ..... 345
Walter R. Bloom and Herbert Heyer, Non-symmetric translation invariant Dirichlet forms on hypergroups ..... 61
M.A. Bokhari, Perturbation of nodes and poles in certain rational interpolants ..... 177
Ian Boyd, A mathematical model of the business cycle [A]. ..... 331
R. G. Burns, A. Karrass and D. Solitar, A note on groups with separable finitely generated subgroups ..... 153
Gary Chartrand, S. F. Kapoor, Ortrud R. Oellerman and Sergio Ruiz, On maximum matchings in cubic graphs with a bounded number of bridge-covering paths ..... 441
D. W. Curtis see V. N. Akis
David E. Dobbs, Going-down underrings ..... 503
Bau-Sen Du, Examples of expanding maps with some special properties ..... 469
Francois Dubeau and Jean Savoie, On circulant matrices for certain periodic spline and histospline projections ..... 49
M. M. Еlhosh, On the logarithmic derivatives of subordinate functions ..... 127
J. Esquinas and J. Lopez-Gomez, Optimal results in local bifurcation theory. ..... 25
M. Fabian, Each weakly countably determined Asplund space admits a Fréchet differentiable norm ..... 367
S. Feigelstock and R. Raphael, Some aspects of relative injectivity ..... 161
Anthony M. Gaglione and Dennis Spellman, The persistence of universal formulae in free algebras ..... 11
T. Gedeon, There are no chaotic mappings with residual scrambled sets ..... 41
Shahaboddin Ghahreman, Extrema of Gaussian process by simulation [A] ..... 521
Ester Giarrusso and Guido Trombetti, Estimates for solutions of elliptic equations in a limit case ..... 425
Hendrik Grundling, Algebraic structure of degenerate systems [A] ..... 341
Shirley Yolande Hairsine, Numerical and analytical solutions of the kinematic approximation for flows over surface elements [A] ..... 337
Peter Hauck and Reinhold Kienzle, Modular fitting functors in finite groups ..... 475
Herbert Heyer see Walter R. Bloom
Thomas Hoffman-Walbeck, Dirichlet problem with LP-boundary data [A] ..... 173
S. A. Huq, Semi-homorphisms of rings ..... 121
G. B. Im and G. M. Kelly, Adjoint-triangle theorems for conservative functors ..... 133
G. Isac, Fixed point theory and complementarity problems in Hilbert space ..... 295
S. F. Kapoor see Gary Chartrand
A. Karrass see R. G. Burns
G. M. Kelly see G. B. Im
G. M. Kelly, On the ordered set of reflective subcategories ..... 137
Reinhold Kienzle see Peter Hauck
Kazuaki Kitahara see Shiró Ogawa
Sung Eun Koh , Stability of a constant mean curvature surface in $\mathbb{R}^{3}$ ..... 19
Klaus Kriegel, Reinhard Póschell and Walter Wessel, The dimension of graphs with respect to the direct powers of a two-element graph ..... 251
Wojciech Kucharz, A remark on projective modules ..... 515
K. Kuppuswamy Rao see M. L. Narayana Rao
athanasios Kyriazis, Tensor products of function algebras ..... 417
Susanti Lianto, Recursive estimation in the general linear model [A] ..... 351
Fang Hua Lin, Approximation by smooth embedded hypersurfaces with positive mean curvature ..... 197
Fang Hua Lin, Minimality and stability of minimal hypersurfaces in $\mathbf{R}^{\mathbf{n}}$ ..... 209
A. Garcia López, Operators on locally convex spaces of vector-valued continuous functions ..... 267
J. López-GOmez see J. Esquinas
Berthold J. Maier, Two remarks on amalgams of locally finite groups ..... 461
Sidney A. Morris, The circle group ..... 279
Subhashis Nag, Conformally natural Ahlfors-Weill sections and Bers' reproducing formulas ..... 187
M. Thamban Nair, A modified projection method for equations of the second kind ..... 485
Takahiko Nakazi, The Nevanlinna-Pick theorem and a non-positive definite matrix ..... 361
M. L. Narayana Rao, K. Kuppuswamy Rao and G. V. Subba Rao, Translation complements of C-planes: (I) ..... 99
Ng Tze Beng, A note on immersing manifolds in euclidean spaces ..... 215
Ortrud R. Oellerman see Gary Chartrand
Shiró Ogawa and Kazuaki Kitahara, an extension of Mūntz's theorem in multivariables ..... 375
Reinhard Póschell see Klaus Kriegel
R. Raphael see S. Feigelstock
Werner Ricker, A commutative criterion for prespectral operators ..... 113
Sergio Ruiz see Gary Chartrand
Robert S. Rumley and A. J. van der Poorten, Remarks on generalised power sums ..... 311
Gary Joseph Saliba, Non-LTE scattering resonance polarization in solar spectral lines [A] ..... 349
Jean Savoie see Françoios Dubeau
Niel Shell, Bounded and relatively bounded sets ..... 493
D. Solitar see R. G. Burns
Dennis Spellman see Anthony M. Gaglione
Kavita Srivastava, On the Stone-Cech compactification of an orbit space ..... 435
Mila Stojakovic, Common fixed point theorems in complete metric and probablistic metric spaces ..... 73
G. V. Subba Rao see M. L. Narayana Rao
Charles Swartz, The closed graph theorem without category ..... 283
G. Szekeres, Asymptotic distribution of the number and size of parts in unequal partitions ..... 89
Stanisiaw Szufla, On the Kneser-Hukuhara property for integral equations in locally convex spaces ..... 353
Richard Taylor, On some reconstruction problems [A] ..... 527
Guido Trombetti see Ester Giarrusso
A. J. van der Poorten see Robert S. Rumley
Tony van Ravenstein, Number sequences and phyllotaxis [A] ..... 333
Peter John Vassiliou, The geometry of nonlinear wave equations in two independent variables: methods for exact solution [A] ..... 523
Enzio Venturino, Solving singular integral equations via ( $0,2,3$ ) lacunary interpolation ..... 239
J. Vukman, A note on additive mappings in noncommutative fields ..... 499
Walter Wessel see Klaus Kriegel
Sing Yan, Robert Wong, On the dictionary between ergodic transformations, Krieger factors and ergodic flows [A] ..... 171
Mingyao Xu, The power structure of finite p-groups ..... 1
Norio Yoshida, Forced oscillations of solutions of parabolic equations ..... 289
Stephen M. Zemyan, On the total torsion of certain non-closed sphere curves ..... 39
*[A] Abstract of Ph.D. Thesis

