

PROCEEDINGS
OF THE
EDINBURGH MATHEMATICAL SOCIETY

EDITED BY

K. A. BROWN
S. D. COHEN
T. N. T. GOODMAN
A. A. LACEY

C. M. CAMPBELL
T. A. GILLESPIE
J. HOWIE
D. MONK

CONSULTING EDITORS

W. B. ARVESON
P. J. BROWNE
P. J. HOLMES
S. J. PATTERSON
G. STRANG

Sir MICHAEL ATIYAH, P.R.S.
D. L. BURKHOLDER
O. H. KEGEL
D. S. PASSMAN
L. C. TARTAR

VOLUME 36 (SERIES II)
1993

OXFORD UNIVERSITY PRESS

COPYRIGHT © 1993 THE EDINBURGH MATHEMATICAL SOCIETY

Printed in Great Britain by
Bell and Bain Ltd., Glasgow

CONTENTS

	<i>Page</i>
D. D. BAINOV, S. I. KOSTADINOV AND P. P. ZABREIKO L_p -equivalence of a linear and a nonlinear impulsive differential equation in a Banach space	17
JOHN BAKER, NEIL HINDMAN AND JOHN PYM Elements of finite order in Stone–Čech compactifications	49
R. BEAZER AND J. SICHLER Congruence permutable extensions of distributive double p -algebras	165
JOSÉ BONET AND SUSANNE DIEROLF On the lifting of bounded sets in Fréchet spaces	277
PETER BORWEIN AND TAMÁS ERDÉLYI Lacunary Müntz systems	361
PATRICK J. BROWNE AND B. D. SLEEMAN Asymptotic estimates for eigenvalues of right definite two parameter Sturm–Liouville problems	391
MARTIN BUHMANN AND NIRA DYN Spectral convergence of multiquadric interpolation	319
ANGEL CAROCCA AND RUDOLF MAIER The p -Huppert-subgroup and the set of p -quasi-superfluous elements in a finite group	289
A. W. CHATTERS Non-isomorphic rings with isomorphic matrix rings	339
Y. CHOI, see GASTON L. HERNANDEZ	
JOAN CLEARY AND SIDNEY A. MORRIS Generators for locally compact groups	463
SUSANNE DIEROLF, see JOSÉ BONET	
NIRA DYN, see MARTIN BUHMANN	
TAMÁS ERDÉLYI, see PETER BORWEIN	
MATTS ESSÉN On minimal thinness, reduced functions and Green potentials	87
USHA GARG, see SUDESH K. KHANDUJA	
J. R. J. GROVES AND G. C. SMITH Soluble groups with a finite rewriting system	283
SIGMUNDUR GUDMUNDSSON Harmonic morphisms between spaces of constant curvature	133
GARY G. GUNDERSEN An application of the spread relation to differential equations	211

KENNETH HARDY AND KENNETH S. WILLIAMS	The squareroot of an ambiguous form in the principal genus	145
GASTON L. HERNANDEZ AND Y. CHOI	Existence of solutions in a singular biharmonic nonlinear problem	537
NEIL HINDMAN,	see JOHN BAKER	
A. HOPENWASSER AND S. C. POWER	Classification of limits of triangular matrix algebras	107
LEETSCH C. HSU	Some theorems on Stirling-type pairs	525
GÜNTHER HUCK AND STEPHAN ROSEBROCK	A bicombing that implies a sub-exponential isoperimetric inequality	515
RONG-QING JIA AND CHARLES A. MICCHELLI	On linear independence for integer translates of a finite number of functions	69
KERRY N. JONES	Injectively immersed tori in branched covers over the figure eight knot	231
ANDRZEJ W. KĘDZIERAWSKI	The determination of the surface impedance of an obstacle	1
SUDESH K. KHANDUJA AND USHA GARG	Residue fields of valued function fields of conics	469
A. C. KING	see D. J. NEEDHAM	
E. KISSIN AND V. S. SHULMAN	Dense Q -subalgebras of Banach and C^* -algebras and unbounded derivations of Banach and C^* -algebras	261
S. I. KOSTADINOV,	see D. D. BAINOV	
J. K. LANGLEY	On the deficiencies of composite entire functions	151
MARK V. LAWSON	Coverings and embeddings of inverse semigroups	399
WALTER LEDERMANN	A note on skew-symmetric determinants	335
D. D. LONG AND A. W. REID	Closed incompressible surfaces in 2-generator hyperbolic 3-manifolds with a single cusp	501
K. W. MACKENZIE	Prime ideals in skew Laurent polynomial rings	299
RUDOLF MAIER,	see ANGEL CAROCCA	
M. MATELJEVIĆ AND M. PAVLOVIĆ	An extension of the Forelli–Rudin projection theorem	375
CHARLES A. MICCHELLI,	see RONG-QING JIA	
SIDNEY A. MORRIS,	see JOAN CLEARY	
A. MOUSSAVI	On the semiprimitivity of skew polynomial rings	169

CONTENTS

v

D. J. NEEDHAM AND A. C. KING On the existence and uniqueness of solutions to a singular nonlinear boundary value problem arising in isothermal autocatalytic chemical kinetics	479
M. PAVLOVIĆ see M. MATELJEVIĆ	
S. C. POWER see A. HOPENWASSER	
THILO PRUSCHKE Notes on questions of W. Vogel concerning the converse to Bézout's theorem	427
JOHN PYM, see JOHN BAKER	
VLADIMIR RAKOČEVIĆ Generalized spectrum and commuting compact perturbations	197
A. W. REID, see D. D. LONG	
EDMUND F. ROBERTSON AND YUSUF ÜNLÜ On semigroup presentations	55
STEPHAN ROSEBROOK see GÜNTHER HUCK	
BRYAN P. RYNNE The asymptotic distribution of the eigenvalues of right definite multiparameter Sturm–Liouville systems	35
V. S. SHULMAN, see E. KISSIN	
J. SICHLER, see R. BEAZER	
PEDRO V. SILVA On the semilattice of idempotents of a free inverse monoid	349
STEPHEN SLEBARSKI On the characters of affine Kac–Moody groups	179
B. D. SLEEMAN, see PATRICK J. BROWNE	
G. C. SMITH, see J. R. J. GROVES	
D. W. B. SOMERSET AND G. A. WILLIS On the closure of the prime radical of a Banach algebra	421
SZE-KAI TSUI Extreme n -positive linear maps	123
YUSUF ÜNLÜ, see EDMUND F. ROBERTSON	
KENNETH S. WILLIAMS, see KENNETH HARDY	
G. A. WILLIS see D. W. B. SOMERSET	
P. P. ZABREIKO, see D. D. BAINOV	
CHEN ZONG-XUAN On the complex oscillation theory of $f^{(k)} + Af = F$	447

THE EDINBURGH MATHEMATICAL SOCIETY

The Edinburgh Mathematical Society was instituted in 1883 for "the promotion and extension of Mathematical Science, Pure and Applied".

Members may subscribe to the *Proceedings* at a reduced rate. Further information about membership can be obtained from the Secretary.

The Society's address is

The Edinburgh Mathematical Society
James Clerk Maxwell Building
The King's Buildings
Edinburgh EH9 3JZ

Submission of papers

Papers to be considered for publication should be sent to the Secretary or to an Editor. Manuscripts (2 copies) should be typewritten on A4 paper with double spacing and generous margins. The style and arrangement should conform to current practice in the *Proceedings*. Each manuscript should contain a short abstract of not more than 200 words and also a primary classification number from the American Mathematical Society's 1991 Mathematics Subject Classification Scheme. References, including titles of papers, should be given in the form adopted by *Mathematical Reviews*, footnotes being avoided if possible. Figures should be separated from the text and lettered, ready for photographic reduction; their intended location should be clearly indicated. Manuscripts which are not suitable for submission to the printer will not be accepted. Authors are advised to retain a copy of any material submitted as the Society cannot accept responsibility for any loss.

A proof is supplied once. Authors are particularly requested to correct and return the proof promptly. Excessive corrections may be charged to authors. Fifty free offprints, and additional copies at cost, will be supplied if ordered on a form returned with the proof.

Addresses of Editors

K. A. Brown
Department of Mathematics
University of Glasgow
University Gardens
Glasgow G12 8QW

S. D. Cohen
Department of Mathematics
University of Glasgow
University Gardens
Glasgow G12 8QW

T. N. T. Goodman
Department of Mathematics and
Computer Science
University of Dundee
Dundee DD1 4HN

A. A. Lacey
Department of Mathematics
Heriot-Watt University
Riccarton
Edinburgh EH14 4AS

C. M. Campbell
Mathematical Institute
University of St Andrews
North Haugh
St Andrews KY16 9SS

T. A. Gillespie
Department of Mathematics and Statistics
University of Edinburgh
The King's Buildings
Edinburgh EH9 3JZ

J. Howie
Department of Mathematics
Heriot-Watt University
Riccarton
Edinburgh EH14 4AS

D. Monk
Department of Mathematics and Statistics
University of Edinburgh
The King's Buildings
Edinburgh EH9 3JZ