NEW DIRECTIONS IN DIFFERENTIAL EQUATIONS AND DYNAMICAL SYSTEMS

A collection of papers dedicated to J K Hale on the occasion of his 60th birthday

Edited by J M Ball

This volume is dedicated to Jack Hale to mark his 60th birthday on 3 October 1988. It contains invited articles contributed by his friends and colleagues, and in particular by the invited speakers at the Symposium on *New Directions in Dynamical Systems* held in Jack Hale's honour in August 1988 at Brown University. The variety and interest of these articles reflects the enormous influence that Jack Hale has had on the study of differential equations and dynamical systems. All the articles were referred and have appeared in recent issues of *Proceedings A*.

The volume was published in June 1991 and is available from the Publications Manager, The Royal Society of Edinburgh, 22–24 George Street, Edinburgh EH2 2PQ, Scotland. (Tel: 031 225 6057. Fax: 031 220 6889)

Publication details

ISSN: 0 902198 06 8. Extent: 640 pp. Size: 175×250 mm. Prices: Institutions £27.50 (U.K. only), £29.50/\$59.00 (rest of the world) Individuals £17.50 (U.K. only), £19.50/\$39.00 (rest of the world)

Cheques should be made payable to 'The Royal Society of Edinburgh' and should accompany your order. The 'individual' rate only applies to those orders which are accompanied by a personal cheque. All prices include postage.

NOTES FOR AUTHORS

Proceedings of the Royal Society of Edinburgh: Section A is a general journal, and papers in all areas of mathematics will be considered. Papers to be considered for publication should be sent to the Publications Manager, The Royal Society of Edinburgh, 22 George Street, Edinburgh EH2 2PQ, Scotland.

A paper by more than one author must be submitted with a statement, signed by each author, to the effect that the paper in its entirety is approved by the joint authors and naming the author who will be responsible for correspondence with the Society.

Authors will receive fifty (50) offprints free of charge, this number to be shared between joint authors. Additional offprints may be obtained, in units of fifty, at a fixed scale of prices given on a form which will be attached to the proof.

In view of the high cost of publication, authors must prepare their papers as concisely as possible. Manuscripts should be submitted in triplicate and preferably should be typewritten on one side of A4 paper, double spaced with adequate margins. Authors are advised to retain a copy of their papers as the Society cannot accept responsibility for any loss.

Every paper must be accompanied by a Synopsis, in general not exceeding two hundred words, which will be printed in small type at the beginning of the paper.

References within the text should be indicated by bold numbers in square brackets, e.g. [2] or [3, p. 167]. For style of references at end of text, see recent issues of *Proceedings A*.

Authors should ensure that punctuation carries through the mathematics in the proper manner. The use of hyphens should be consistent. In the text avoid such abbreviations as: iff, w.r.t., a.e., \forall , \exists , and thm.

Footnotes should be avoided. Headings should not be underlined. Every effort should be made to avoid complicated subscripts, superscripts, ranges of summation and integration. Horizontal fraction signs should normally be avoided: use either solidus signs / or negative exponents. Replace $e^{(...)}$ by $\exp[\ldots]$ if the expression in parenthesis is complicated. Simple formulae should *not* be displayed unless they require a formula number. Use the prime ' or d/dx, but preferably not a dot, to denote ordinary differentiation. If possible use subscripts to denote partial differentiation of $\partial/\partial x$ etc. Bars reaching over several letters should be avoided: use $\sqrt{()}$ or the exponent 1/2 for the square root. Sub-subscripts and super-superscripts should be avoided if possible: bars and other devices over indices cannot be supplied.

Note that confusion very often arises between 1 (one) and l (ell): 0 (zero) and O (Capital oh): \circ (composition) and o (lower case oh): x and \times : U and \cup : c and \subseteq : \in (belongs to) and ϵ (epsilon): \emptyset (empty set) and ϕ (phi): $_1$ and comma ,: prime ' and 1 : K and κ : p and ρ : w and ω : Σ (summation) and Σ (capital sigma): \prod (product) and \prod (capital pi): v (lower case vee) and v (Greek *nu*): a (lower case a) and α (Greek alpha): y (lower case y) and γ (Greek gamma). Please provide pencilled indicators in the margin where necessary. Where capitals and lower case of the same shape have to be printed, please indicate accordingly. Show italics by single underlining (except in the formulae which are set up normally in italics), bold face/Clarendon by wavy underlining and Greek by red underlining.

The statement of theorems, lemmas, et cetera, will be printed in italics and should be underlined. In definitions key words only should be in italics.

Equations should be indicated by numbers in parentheses in the right-hand margin.

Proofs of papers will be sent to the author. The cost of authors' corrections in excess of five per cent of the printers' charge for the setting of a particular paper will be charged to the author.

Copyright

© 1991 The Royal Society of Edinburgh and the authors of individual papers.

It is the policy of the Royal Society of Edinburgh not to charge any royalty for the production of a single copy of any one article made for private study or research. Specific permission will not be required for photocopying multiple copies of copyright material, to be used for *bona fide* educational purposes, provided this is done by a member of the staff of the university, school or other comparable institution, for distribution without profit to student members of that institution and provided the copies are made from the original journal. Requests for the copying or reprinting of any article for any other purpose should be sent to the Royal Society of Edinburgh, 22/24 George Street, Edinburgh

PROCEEDINGS OF THE ROYAL SOCIETY OF EDINBURGH (Section A)

Volume 118	1991	Parts 3/4
	CONTENTS	
YOUSONG LOU and NEIL S. T	RUDINGER	
Linear second order conditions	elliptic equations with Ventt	sel boundary 193
W. L. EDGE A plane sextet and its fi	ve cuene	209
C. J. AMICK	ve cusps	209
A problem in neural ne	tworks	225
HANS-PETER HEINZ		
Lacunary bifurcation for value problems on \mathbb{R}^{N}	or operator equations and nonlir	near boundary 237
J. B. McLEOD and W. C. Th	ROY	
	nucleons under spherical symmet	ry 271
ROGER C. ALPERIN		
Hypergeometric groups		289
WOLFGANG ROTHER		1 1 0 7 05
	ely many solutions all bifurcating	from $\lambda = 0$ 295
M. A. HERRERO and J. J. L.		305
Song-Sun Lin	milinear elliptic problem	303
	or semilinear elliptic equations	on sectorial
domains in \mathbb{R}^{2*}	n semimear emptie equations	327
D. HILHORST, Y. NISHIURA a	and M MIMURA	521
	em arising in some reacting-diffus	sing system 355

ISSN 0308-2105

Proc. Roy. Soc. Edinb., A. 118

Published by the Royal Society of Edinburgh 22 George Street, Edinburgh EH2 2PQ Printed in Northern Ireland at the Universities Press (Belfast) Ltd