## PROCEEDINGS

OF

## THE ROYAL SOCIETY OF EDINBURGH

## PROCEEDINGS

OF

## THE ROYAL SOCIETY OF EDINBURGH

Section A (Mathematics)

$$
\text { VOL. } 96
$$

1984

## PUBLISHED BY <br> THE ROYAL SOCIETY OF EDINBURGH <br> 22 GEORGE STREET EDINBURGH EH2 2PQ <br> 1984

## NOTES FOR AUTHORS

Papers to be considered for publication should be sent to the Editorial Secretary, 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 $e^{(\ldots)}$ 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 $d / d x$, 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 $x: U$ and $U: c$ and $\subset: \in$ (belongs to) and $\epsilon$ (epsilon): $\varnothing$ (empty set) and $\phi$ (phi): ${ }_{1}$ and comma ,: prime ' and ${ }^{1}$ : $K$ and $\kappa: p$ and $\rho: w$ and $\omega: \sum$ (summation) and $\Sigma$ (capital sigma): $\Pi$ (product) and $\Pi$ (capital pi): $v$ (lower case vee) and $v$ (Greek $n u$ ): $a$ (lower case a) and $\alpha$ (Greek alpha): $y$ (lower case y) and $\gamma$ (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

(C) 1984 The Royal Society of Edinburgh and the authors of individual papers.

[^0]PROCEEDINGS OF THE ROYAL SOCIETY OF EDINBURGH (Section A)
Volume 961984Parts 3/4
CONTENTS
J. E. A. Dunnage
A note on concentration functions ..... 181
J. F. T. Hartney
An antiradical for near-rings ..... 185
Jean Lavoine and O. P. Misra
Abelian theorems for the distributional Mellin transform ..... 193
M. A. Armstrong
Lifting homotopies through fixed points II ..... 201
H. R. Farran and S. A. Robertson Integrable spreads ..... 206
W. N. Everitt and Jennifer D. Key
On some properties of matrices associated with linear ordinary quasi- differential expressions ..... 211
alain Haraux
On a uniqueness theorem of L. Amerio and G. Prouse ..... 221
Adam C. McBride
On an index law and a result of Buschman ..... 231
T. N. T. Goodman and S. L. Lee
Interpolatory and variation-diminishing properties of generalized $B$ - splines ..... 249
Paul Binding, Patrick J. Browne and Lawrence Turyn
Existence conditions for eigenvalue problems generated by compact multiparameter operators ..... 261
Thierry Gallouët and Jean-Michel Morel
Resolution of a semilinear equation in $L^{1}$ ..... 275
Michael Reeken
Exotic equilibrium states of the elastic string ..... 289
R. C. Brown
The Dirichlet index under minimal conditions ..... 303
Joel Avrin
Singular first order perturbations of the heat equation ..... 317
Tosio Kato
Nonselfadjoint Schrödinger operators with singular first-order coeffi- cients ..... 323
S. Solimini
Multiplicity results for a nonlinear Dirichlet problem ..... 331
Gustavo Perla MenzalaPropagation of classical solutions to the perturbed wave equation in aspace of odd dimension337
Harold Simmons
Torsion theoretic points and spaces ..... 345
Index ..... V


[^0]:    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. 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 EH2 2PQ

