

ANNOUNCEMENT

As from the first issue of 1993 (due on 10 February 1993) *Proceedings A* is changing its volume:issue numbering system.

In place of 3 volumes of two parts each, we will now publish one volume in six parts. The 1993 volume will be published as volume 123 parts 1 to 6, bimonthly from February.

We hope the changeover will cause no inconvenience and believe the simplification in numbering will result in more efficient order-processing.

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 $e^{(\dots)}$ by $\exp[\dots]$ 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 \subset ; \in (belongs to) and ϵ (epsilon); \emptyset (empty set) and ϕ (phi); γ and comma $,$; prime ' and \prime ; K and κ ; p and ρ ; w and ω ; \sum (summation) and Σ (capital sigma); \prod (product) and Π (capital pi); v (lower case vee) and ν (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

© 1992 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 EH2 2PQ

PROCEEDINGS OF THE ROYAL SOCIETY OF EDINBURGH
(Section A)

Volume 122

1992

Parts 1/2

CONTENTS

PAUL DEURING	
The resolvent problem for the Stokes system in exterior domains: uniqueness and non-regularity in Hölder spaces	1
M. ASLAM CHAUDHRY and MUNIR AHMAD	
On some infinite integrals involving logarithmic exponential and powers	11
G. DIAZ	
Blow-up time involved with perturbed Hamilton–Jacobi equations	17
P. G. DIXON and G. A. WILLIS	
Approximate identities in extensions of topologically nilpotent Banach algebras	45
LEON VAN WYK	
The \mathcal{J}_2 -radical in structural matrix near rings, II	53
JIE QING	
Remark on the Dirichlet problem for harmonic maps from the disc into the 2-sphere	63
H. I. FREEDMAN and T. KRISZTIN	
Global stability in models of population dynamics with diffusion. I. Patchy environments	69
PIUS KIRRMANN, GUIDO SCHNEIDER and ALEXANDER MIELKE	
The validity of modulation equations for extended systems with cubic nonlinearities	85
A. V. CHERKAEV and L. V. GIBIANSKY	
The exact coupled bounds for effective tensors of electrical and magnetic properties of two-component two-dimensional composites	93
JOHN W. RUTTER	
The group of homotopy self-equivalences of non-simply-connected spaces using Postnikov decompositions Π^1	127
CHIE-PING CHU and HWAI-CHIUAN WANG	
Symmetry properties of positive solutions of elliptic equations in an infinite sectorial cone	137
DENG YINBING	
Existence of multiple positive solutions for a semilinear equation with critical exponent	161
YI ZHOU	
An L^p theorem for compensated compactness	177

ISSN 0308–2105

Proc. Roy. Soc. Edinb., A. 122

Published by the Royal Society of Edinburgh
Printed in Northern Ireland at the Universities Press (Belfast) Ltd
Distributed by CAB International, Wallingford