

**The following contributions have been accepted for publication and will appear shortly:**

J. F. G. AUCHMUTY

Positivity for elliptic and parabolic systems

S. BANK

Some results on the Gamma function and other hypertranscendental functions.

H. E. BENZINGER

Eigenvalues of regular differential operators.

A. DONATO

The propagation of weak discontinuities in quasi-linear hyperbolic systems when a characteristic shock occurs.

R. H. DYE

Harmonic tetrads and harmonic elliptic quartic curves.

W. N. EVERITT and M. GIERTZ

Inequalities and separation for Schrödinger type operators in  $L_2(\mathbb{R}^n)$ .

J. C. GUILLOT and C. H. WILCOX

Spectral analysis of the Epstein operator.

J. K. HALE and H. M. RODRIGUES

Bifurcation in the Duffing equation with independent parameters, II.

C. H. HOUGHTON

Counting completely 0-simple and completely simple semigroups.

E. F. INFANTE and J. A. WALKER

A Liapunov functional for a scalar differential difference equation.

S. A. ROBERTSON

Isometric folding of Riemannian manifolds.

J. S. ROSE

Finite metacyclic groups all extensions of which split.

J. SCHRÖDER

Inverse monotone differential operators of the second order.

B. SIMON

Lower semicontinuity of positive quadratic forms.

R. A. SMITH

Some elliptic balls which avoid a Nyquist set in  $C^{n+1}$ .

E. STROESCU

Perturbation of nonlinear partial differential variational inequalities, II.

J.-L. ZOLÉSIO

Multiplication dans les espaces de Besov.

# PROCEEDINGS OF THE ROYAL SOCIETY OF EDINBURGH

## (Section A)

Volume 79

1977

Parts 1/2

---

---

### CONTENTS

J. S. MARTINS	
Embeddings of Sobolev spaces of fractional order	1
M. S. P. EASTHAM and J. B. McLEOD	
The existence of eigenvalues embedded in the continuous spectrum of ordinary differential operators	25
M. SHEARER	
Small solutions of a non-linear equation in Banach space for a degenerate case	35
M. S. P. EASTHAM	
The limit-4 case of fourth-order self-adjoint differential equations	51
W. D. EVANS	
On the essential self-adjointness of powers of Schrödinger-type operators	61
NELSON ONUCHIC and PLÁCIDO Z. TÁBOAS	
Qualitative properties of nonlinear ordinary differential equations	79
JOHN HEADING	
Transformations between second order linear differential equations and a reinterpretation of recurrence relations between Bessel functions with algebraic coefficients	87
H. ATTOUCH et A. DAMLAMIAN	
Application des méthodes de convexité et monotonie à l'étude de certaines équations quasi linéaires	107
JOHN B. CONWAY, BERNARD B. MORREL and JOSEPH G. STAMPFLI	
The operator equation $TS=1$ and representations of $1'$ of the bicyclic semigroup	131
LAWRENCE A. HARRIS	
Operator Siegel Domains	137
H. KALF	
Non-existence of eigenvalues of Schrödinger operators	157
JOHN W. DETTMAN	
Related singular problems and the generalized Hilbert transform	173

---

---

ISSN 0308-2105

*Proc. Roy. Soc. Edinb., A. 79*

*Published by The Royal Society of Edinburgh  
22 George Street, Edinburgh EH2 2PQ*

*Printed in Northern Ireland at The Universities Press (Belfast) Ltd.*