

**The following papers have been accepted for publication and will appear in 1980:**

- H. D. ALBER. Reflection of singularities of solutions to the wave equation and the leading singularity of the scattering kernel.
- K. F. ANDERSEN. Weighted inequalities for the Stieltjes transformation and Hilbert's double series.
- R. J. COLE. Complementary bivariational principles for linear problems involving nonself-adjoint operators.
- DAVID COLTON and RALPH KLEINMAN. The direct and inverse scattering problems for an arbitrary cylinder: Dirichlet boundary conditions.
- HANS L. CYCON. On the stability of self-adjointness of Schrödinger operators under positive perturbations.
- AALT DIJKSMA. Eigenfunction expansions for a class of  $J$ -selfadjoint ordinary differential operators with boundary conditions containing the eigenvalue parameter.
- PAUL ERDOS. Proof of a conjecture of Offord.
- CHARLES T. FULTON. Singular eigenvalue problems with eigenvalue parameter contained in the boundary conditions.
- F. P. GARDINER. On Jenkins-Strebel differentials for open Riemann surfaces.
- VINOD B. GOYAL and PHILIP W. SCHAEFER. Liouville theorems for a class of fourth order elliptic equations.
- B. J. HARRIS. On the essential spectrum of self-adjoint operators.
- EINAR HILLE. Differential operators of infinite order.
- WU-TEH HSIANG and MAN KAM KWONG. A comparison theorem for the first nodal line of the solutions of quasilinear hyperbolic equations with non-increasing initial values.
- IAN KIRKWOOD. The isomorphism semigroup of a periodic abelian group.
- C. G. LYONS and J. D. P. MELDRUM.  $N$ -series and tame near-rings.
- GUSTAVO PERLA MENZALA. Existence of classical solutions of a Hartree type equation.
- F. W. J. OLVER. Whittaker functions with both parameters large: uniform approximations in terms of parabolic cylinder functions.
- H. SAIFLU and I. TWEDDLE. From  $B$ -completeness to countable codimensional subspaces via the closed graph theorem.
- N. S. WILKES. On the non-existence of semi-groups for some equations of continuum mechanics.

*Copyright*

© 1980 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. 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 85

1980

Parts 3/4

---

## CONTENTS

W. D. COLLINS	
An extension of the method of the hypercircle to linear operator problems with unilateral constraints	173
DAVID RAND	
On the local stability of wave fronts defined by eikonal equations	195
HILBERT FRENTZEN	
Limit-point criteria for systems of differential equations	233
W. A. SKRAPEK	
Instability results for fourth order differential equations	247
M. SLEMROD	
Stability of steady shearing flows subject to large shearing perturbations in a non-linear viscoelastic fluid	251
IAN KNOWLES and DAVID RACE	
On the point-spectra of complex Sturm-Liouville operators	263
RAINER PFAFF	
Gewöhnliche lineare Differentialgleichungen $n$ -ter Ordnung mit Distributionskoeffizienten	291
KUSUM SONI	
On uniform asymptotic expansions of finite Laplace and Fourier integrals	299
T. S. BLYTH	
Baer semigroup coordinatisations of distributive lattices	307
ABBAS BAHRI and HAÏM BREZIS	
Periodic solutions of a non-linear wave equation	313
E. N. DANCER	
On the existence of bifurcating solutions in the presence of symmetries	321
D. C. TRUEMAN	
Finite direct products of finite cyclic semigroups and their characterization	337
INDEX	353
CONTENTS	v

---

ISSN 0308-2105

*Proc. Roy. Soc. Edinb.*, A. 85

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

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