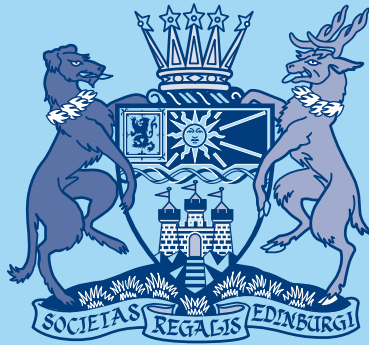


Volume 149 Part 3 (2019) pages 561–847

ISSN 0308-2105

THE ROYAL SOCIETY OF
EDINBURGH



PROCEEDINGS SECTION A
MATHEMATICS

PUBLISHED BY THE RSE SCOTLAND FOUNDATION
22 GEORGE STREET, EDINBURGH EH2 2PQ

EDITORIAL BOARD

B. PELLONI (Editor in Chief)
Heriot Watt University
Nonlinear PDEs and integrability

V. MOROZ
University of Swansea
Nonlinear partial differential equations

A. BARTEL
University of Glasgow
Number theory; representation theory

J. C. ROBINSON
University of Warwick
Ordinary and Partial Differential Equations

A. BAYER
University of Edinburgh
Algebraic geometry

C. M. RONEY-DOUGAL
University of St. Andrews
Group theory, computational algebra

T. E. BRENDLE
University of Glasgow
Geometric and combinatorial group theory; low dimensional topology

M. J. TINDALL
University of Reading
Mathematical biology, pharmacology and medicine

F. A. DAVIDSON
University of Dundee
Quantitative (systems) biology; applied analysis

J. H. VANNESTE
University of Edinburgh
Fluid dynamics; waves and instabilities; mixing

J. M. FRASER
University of St Andrews
Measure and integration. Dynamical systems and ergodic theory

A. Y. VERETENNIKOV
University of Leeds
Stochastic analysis

M. GRANT
University of Aberdeen
Algebraic and differential topology and their applications

S. WHITE
University of Glasgow
Functional analysis and operator algebras

S. ZELIK
University of Surrey
Dynamical systems and PDEs – theory and applications

Subscription details

The journal is published every two months by the RSE Scotland Foundation. (EISSN: 1473-7124) Subscription fulfilment, distribution and marketing are handled by Cambridge University Press.

An annual subscription costs £628.00/\$1171.00 (Online plus Print) or £562.00/\$1031.00 (Online only). Orders should be placed with Cambridge University Press, Journals Fulfilment Department, UPH, Shaftesbury Road, Cambridge CB2 8BS UK Telephone: +44 (0)1223 326070; Fax: +44 (0)1223 325150; e-mail: journals@cambridge.org.

This journal is included in the Cambridge Core service which can be found at <https://www.cambridge.org/core/journals/proceedings-of-the-royal-society-of-edinburgh-section-a-mathematics>. Each new issue will be made available shortly before publication of the printed version. Volumes 61 to 147 (1941–2017) are also available via Cambridge Core.

© 2019 The Royal Society of Edinburgh

The Royal Society of Edinburgh, Scotland's National Academy, is Scottish Charity No. SC000470

The RSE Scotland Foundation, a charitable body connected to the Society, is Scottish Charity