# Ergodic theory and dynamical systems

**VOLUME 16 PART 5 OCTOBER 1996** 

# **EXECUTIVE EDITORS**

W. Parry, Mathematics Institute, University of Warwick, Coventry CV4 7AL, England.

Ya. B. Pesin, Department of Mathematics,
The Pennsylvania State University, University Park, Pennsylvania 16802, USA.
(e-mail: pesin@math.psu.edu)

M. Pollicott, Department of Mathematics, University of Manchester, Oxford Road,
Manchester M13 9PL, England.

(e-mail: mp@ma.man.ac.uk)

S. van Strien, Mathematics Institute, University of Warwick, Coventry CV4 7AL, England. (e-mail: etds@maths.warwick.ac.uk)

J.-P. Thouvenot, Laboratoire de Probabilités, Université Paris 6, Tour 56, 4 Place Jussieu, F-75252 Paris Cedex 05, France.

# SURVEY EDITORS

M. R. Herman, Centre de Mathématiques, Ecole Polytechnique, F-91128 Palaiseau Cedex, France.

A. B. Katok, Department of Mathematics, The Pennsylvania State University, University Park, Pennsylvania 16802, USA.

# Ergodic theory and dynamical systems

## **EDITORS**

William Parry Ya. B. Pesin Mark Pollicott S. van Strien J.-P. Thouvenot

# SURVEY EDITORS M. R. Herman A. B. Katok

## EDITORIAL BOARD

B. Branner (Technical University of Denmark, Lyngby)

W. de Melo (IMPA, Rio de Janeiro)

R. Ellis (University of Minnesota, Minneapolis)

A. Fathi (ENS, Lyons)

J. Franks (Northwestern University)

H. Furstenberg (Hebrew University, Jerusalem)

E. Ghys (ENS, Lyon)

G. Keller (University of Erlangen-Nürnberg)

F. Ledrappier (University of Paris 6)

M. Lyubich (State University of New York, Stony Brook)

A. K. Manning (University of Warwick)

B. Marcus (IBM Almaden Research Center, San Jose)

S. Mozes (Hebrew University, Jerusalem)

K. Petersen (University of North Carolina)

Ergodic Theory and Dynamical Systems provides a focus for this important and rapidly developing area of mathematics and an opportunity to bring together many major contributors in the field which are, at the moment, scattered over a large number of non-specialist periodicals

Dynamical methods have proved to be a powerful unifying force in mathematics in recent decades, and they are now beginning to be felt in allied subjects such as physics and biology. *Ergodic Theory and Dynamical Systems* acts as a forum for central problems of differential geometry, number theory, operator algebras, topological, differential and symbolic dynamics, and celestial and statistical mechanics.

Expository survey articles and conference proceedings will be included from time to time and reviews of relevant books will also be published.

Copying: The journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA. 01923, USA. Organizations in the USA who are registered with the CCC may therefore copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to CCC of the per-copy fee of \$11.00. This consent does not extend to multiple copying for promotional and commercial purposes. Code 0143-3857/96 \$11.00 + .10.

Organizations authorized by the Copyright Licensing Agency may also copy material subject to the usual conditions. For all other use, permission should be sought from Cambridge or the American branch of Cambridge University Press.

Information on *Ergodic Theory and Dynamical Systems* and all other Cambridge journals is available on http://www.cup.cam.ac.uk/ and in North America on http://www.cup.org/.

F. Przytycki (Polish Academy of Sciences)

I. Putnam (University of Victoria, British Columbia)

S. M. Rees (University of Liverpool)

D. J. Rudolph (University of Maryland)

D. Ruelle (IHES, Bures-sur-Yvette)

K. Schmidt (University of Vienna)

L. P. Shilnikov (Nizhny Novgorod State University, Russia)

D. Szász (Hungarian Academy of Sciences, Budapest)

A. M. Vershik (Steklov Mathematical Institute, St. Petersburg)

P. Walters (University of Warwick)

J.-C. Yoccoz (Université de Paris-Sud)

L.-S. Young (University of California, Los Angeles)

Subscriptions: Ergodic Theory and Dynamical Systems (ISSN 0143-3857) is published six times a year in February, April, June, August, October and December. The subscription price (excluding VAT) of volume 16, 1996 is £248.00 (US\$434.00 in USA, Canada and Mexico) which includes postage. Single parts cost £45.00 net (US\$78.00 in USA, Canada and Mexico) plus postage. Members of the London Mathematical Society and American Mathematical Society may subscribe for £114.00 (US\$198.00). Six parts usually form a volume. EU subscribers (outside the UK) who are not registered for VAT should add VAT at their country's rate. VAT registered subscribers should provide their VAT registration number. Orders, which must be accompanied by payment, may be sent to a book-seller, subscription agent or direct to the publishers: Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU or, in the USA, Canada and Mexico, Cambridge University Press, 40 West 20th Street, New York, NY 10011-4211, USA. Japanese prices for institutions (including ASP delivery) are available from Kinokuniya Company Ltd, P.O. Box 55, Chitose, Tokyo 156, Japan. Periodicals postage paid at New York, NY and additional mailing offices. POSTMASTER: send address changes in USA, Canada and Mexico to Ergodic Theory and Dynamical Systems, Cambridge University Press, 110 Midland Avenue, Port Chester, New York, NY 10573-4930, USA.

© Cambridge University Press 1996

PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE

The Pitt Building, Trumpington Street, Cambridge CB2 1RP, United Kingdom

CAMBRIDGE UNIVERSITY PRESS

The Edinburgh Building, Cambridge CB2 2RU, United Kingdom 40 West 20th Street, New York, NY 10011-4211, USA

10 Stamford Road, Oakleigh, Melbourne 3166, Australia