The Editor
Ergodic Theory and Dynamical System
Mathematics Institute
University of Warwick
Coventry CV4 7AL
U.K.

Ergodic theory and dynamical systems

VOLUME 10 PART 4 DECEMBER 1990

EXECUTIVE EDITORS

- J. Franks, Department of Mathematics, Northwestern University, Evanston, IL 60201, USA.
 - H. Furstenberg, Department of Mathematics, Hebrew University, Jerusalem, Israel.
 - A. Manning, Mathematics Institute, University of Warwick, Coventry CV4 7AL, England.
 - W. Parry, Mathematics Institute, University of Warwick, Coventry CV4 7AL, England.

CAMBRIDGE UNIVERSITY PRESS

Ergodic theory and dynamical systems

EDITORS

John Franks Hillel Furstenberg Anthony Manning William Parry

EDITORIAL BOARD

R L Adler (Thomas J Watson Research Center, Yorktown Heights)

L A Bunimovich (P P Shirshov Inst of Oceanology, Moscow)

A Connes (IHES)

M Gromov (IHES)

M R Herman (Ecole Polytechnique, Palaiseau)

A B Katok (Pennsylvania State University)

M Keane (Technische Hogeschool Delft)

U Krengel (University of Gottingen)

R Mañé (IMPA)

G A Margulis (USSR Acad of Sciences)

J N Mather (Princeton University)

M Misiurewicz (Warsaw University)

J Moser (ETH, Zurich)

S E Newhouse (University of North Carolina)

Ya B Pesin (Pennsylvania State University)

S M Rees (University of Liverpool)

D J Rudolph (University of Maryland)

D Ruelle (IHES)

K Schmidt (University of Warwick)

J P Thouvenot (University of Paris 6)

W A Veech (Rice University)

P Walters (University of Warwick)

R F Williams (University of Texas, Austin)

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 contributions in the field which are, at the moment, scattered over a large number of non-specialist periodicals

The ideas of dynamics have proved of great importance not only in areas of mathematics like harmonic analysis, geometry, topology and number theory, but also in physics and other allied subjects The papers accepted for publication will reflect this diversity

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

Copying This journal is registered with the Copyright Clearance Center, 27 Congress St, Salem, Mass 01970 Organizations in the USA who are also registered with 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 \$05 00 This consent does not extend to multiple copying for promotional or commercial purposes Code 0143-3856/90 \$5 00 + 00

For all other use, permission should be sought from Cambridge or the American branch of Cambridge University Press

Subscriptions Ergodic Theory and Dynamical Systems (ISSN 0143-3857) is published quarterly in March, June, September and December The subscription price (which includes postage) of volume 10, 1990 is £132 00 UK, £138 00 elsewhere (US \$259 00 in USA and Canada) Single parts cost £35 00 net (US \$68 00 in USA and Canada) plus postage Members of London Mathematical Society may subscribe for £73 00 (US \$137 00) Four parts usually form a volume Orders, which must be accompanied by payment, may be sent to a bookseller, subscription agent or direct to the Cambridge University Press, The publishers Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU or, in the USA and Canada, Cambridge University Press, 40 West 20th Street, New York, NY 10011 Second class postage paid at New York, NY and additional mailing offices POSTMASTER send address changes in USA and Canada to Ergodic Theory and Dynamical Systems, Cambridge University Press, 110 Midland Avenue, Port Chester, New York, NY 10573