

Preface

This special issue of Discrete and Continuous Dynamical Systems is dedicated to Yakov Pesin on the occasion of his sixtieth birthday, which took place in December of 2006. Pesin is one of the world leaders in the field of dynamical systems. His work exerted a deep and lasting influence in the area. Subjects of his landmark works include nonuniform hyperbolicity, smooth ergodic theory, partial hyperbolicity, thermodynamic formalism, and dimension theory in dynamics.

In spite of the difficult conditions since his graduation in 1970 from Moscow State University, he has been highly successful and productive and achieved world-wide recognition already by the time of his immigration to the US in 1989. He became a Professor of Mathematics at The Pennsylvania State University in 1990. Along with continuing his research at the cutting edge of the theory of dynamical systems, his fruitful activities expanded to include extensive expository writing including a number of landmark books, supervision of Ph.D. students, organization of a number of conferences and other professional events, and editorial work. Since 1993 he has been an executive editor of Ergodic Theory and Dynamical Systems.

I am deeply grateful to Anatole Katok, who suggested publication of this issue, for his constant support, and his important help on several crucial occasions. He also wrote the lead piece, a wonderful paper discussing in a very personal style “the milieu which surrounded Pesin and stimulated or obstructed his development as a mathematician, bringing the story to the moment he did his earliest work of great significance and describing reception of this work abroad and at home”. It is not intended to be a scientific biography of Yakov Pesin although it contains generous descriptions, with highlights of his early groundbreaking mathematical results.

There is an important connection between this issue and the conference in Nonuniformly Hyperbolic Dynamics and Smooth Ergodic Theory held at Instituto Superior Técnico, Lisbon in June 25–29, 2007, dedicated to Yakov Pesin, and co-organized by Anatole Katok and myself. Claudia Valls was the local organizer and her untiring work allowed everything to run smoothly. The conference was co-sponsored by the Center for Mathematical Analysis, Geometry and Dynamical Systems, at Instituto Superior Técnico, and the Center for Dynamics and Geometry, at Penn State. Svetlana Katok was an important driving force shaping up this conference. Many of the authors of papers in the issue participated in the conference and there is some overlap between the topics of their talks there and articles published in this volume.

As the editor of this issue dedicated to my advisor and friend Yakov Pesin, I want to thank all authors for contributing the articles and Shouchuan Hu for providing a wonderful venue for this tribute to Yakov Pesin.

Guest Editor:
LUIS BARREIRA

CONTENTS

Anatole Katok, Moscow dynamics seminars of the nineteen seventies and the early career of Yasha Pesin.....1

Valentin Afraimovich and Lev Glebsky, Measures related to (ϵ, n) -complexity functions..... 23

Jawad Al-Khal, Henk Bruin and Michael Jakobson, New examples of S -unimodal maps with a sigma-finite absolutely continuous invariant measure 35

Leonid Bunimovich, Chaotic and nonchaotic mushrooms 63

Keith Burns, Federico Rodriguez Hertz, María Alejandra Rodriguez Hertz, Anna Talitskaya and Raúl Ures, Density of accessibility for partially hyperbolic diffeomorphisms with one-dimensional center..... 75

Keith Burns and Amie Wilkinson, Dynamical coherence and center bunching.... 89

David Cowan, A billiard model for a gas of particles with rotation..... 101

David Cowan, Rigid particle systems and their billiard models 111

Manfred Denker, Yuri Kifer and Manuel Stadlbauer, Thermodynamic formalism for random countable Markov shifts 131

Dmitry Dolgopyat, Bouncing balls in nonlinear potentials 165

Andrey Gogolev and Misha Guysinsky, C^1 -differentiable conjugacy of Anosov diffeomorphisms on three dimensional torus 183

Boris Hasselblatt, Zbigniew Nitecki and James Propp, Topological entropy for nonuniformly continuous maps..... 201

Huyi Hu, Miaohua Jiang and Yunping Jiang, Infimum of the metric entropy of hyperbolic attractors with respect to the SRB measure 215

Thomas Jordan and Mark Pollicott, The Hausdorff dimension of measures for iterated function systems which contract on average..... 235

François Ledrappier and Omri Sarig, Fluctuations of ergodic sums for horocycle flows on \mathbb{Z}^d -covers of finite volume surfaces..... 247

Renaud Leplaideur and Benoît Saussol, Large deviations for return times in non-rectangle sets for axiom A diffeomorphisms 327

Sheldon Newhouse, Distortion estimates for planar diffeomorphisms 345

Viorel Nițică, Journé’s theorem for $C^{n,\omega}$ regularity..... 413

Domokos Szász, Algebro-geometric methods for hard ball systems..... 427

Michiko Yuri, Polynomial decay of correlations for intermittent sofic systems..... 445