

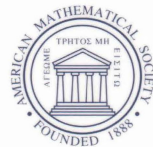
# CONTEMPORARY MATHEMATICS

385

## Algebraic and Topological Dynamics

Algebraic and Topological Dynamics  
May 1–July 31, 2004  
Max-Planck-Institut für Mathematik  
Bonn, Germany

Sergiy Kolyada  
Yuri Manin  
Thomas Ward  
Editors



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## Preface

This volume contains the proceedings of the activity ‘Algebraic and Topological Dynamics’ held at the Max-Planck Institute in Bonn, 1 May - 31 July, 2004 and the European Science Foundation exploratory workshop ‘Dynamical Systems: From Algebraic to Topological Dynamics’ also held at the Max-Planck Institute, 5 - 9 July 2004. The activities brought together researchers from many different branches of dynamical systems, and some of the papers in this volume reflect the collaborative research that took place during the activity. The papers and the talks presented at MPIM also reflect the extraordinary vitality of dynamical systems in its interaction with algebra, number theory, combinatorics, geometry, probability, analysis and other fields.

Some of the aspects of dynamical systems covered by speakers included asymptotic geometric analysis and (topological) transformation groups; arithmetic dynamics;  $C^*$ -endomorphisms; actions of Polish groups; low-dimensional dynamics: graph theory, rotation theory, smooth interval dynamics, area preserving diffeomorphisms and time-one maps on surfaces, Sharkovskii-type theorems,  $C^1$ -expanding maps and  $g$ -functions; complex dynamics; interval exchange transformations and translation flow; billiards; number theory and dynamical systems; leafwise cohomology of algebraic Anosov diffeomorphisms; symbolic dynamics; multifractal analysis and Diophantine approximations; dynamics and moduli spaces; invariant measures and Littlewood’s conjecture; flows on manifolds; translation surfaces and Abelian differentials, symbolic representations of toral automorphisms, Mahler measure and equivalence relations; statistical properties of dynamical systems; transfer operators for geodesic flows and Hecke operators; anisotropic Sobolev spaces, transfer operators for Anosov diffeomorphisms; amoebas and algebraic dynamics; shift operators on buildings and noncommutative spaces; topological orbit equivalence; theory of entropy and chaos.

In addition to the 90 or so mathematicians from 20 different countries who visited MPIM for the activity, many of the long-term visitors at the MPIM took part. Talks took place in an informal and constructive atmosphere, and it was a pleasure to see discussions taking place between groups of participants all over the Institute and at all times of day.

The editors wish to record their thanks to the staff at the Max-Planck Institute and to the many researchers who participated for all their efforts in making this such a stimulating experience.

Sergiy Kolyada, Kiev  
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This volume contains a collection of articles from the special program on algebraic and topological dynamics and a workshop on dynamical systems held at the Max-Planck Institute (Bonn, Germany). It reflects the extraordinary vitality of dynamical systems in its interaction with a broad range of mathematical subjects.

Topics covered in the book include asymptotic geometric analysis, transformation groups, arithmetic dynamics, complex dynamics, symbolic dynamics, statistical properties of dynamical systems, and the theory of entropy and chaos.

The book is suitable for graduate students and researchers interested in dynamical systems.

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