

## PREFACE

This volume contains six survey articles which grew out from mini-courses delivered at Dynamical Systems Semester in September and November 2015 at the Stefan Banach International Mathematical Center of the Institute of Mathematics, Polish Academy of Sciences, within the program “Simons Semesters in Banach Center 2015–2019”.

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The details of the Dynamical Systems semester are available at the web page

<http://bcc.impan.pl/15Simons-I/>

Here are the main topics of the semester:

- analysis and holomorphic dynamics (September 2015),
- fractals (October 2015),
- topics in smooth dynamics (November 2015),
- ergodic theory (November–December 2015).

The organizers were

- Krzysztof Barański (University of Warsaw),
- Piotr Gałązka (Warsaw University of Technology),
- Mariusz Lemańczyk (Nicolaus Copernicus University in Toruń),
- Feliks Przytycki (Institute of Mathematics, Polish Academy of Sciences),
- Michał Rams (Institute of Mathematics, Polish Academy of Sciences).

The semester included four accompanying conferences at the IMPAN premises in Warsaw and at the IMPAN Research and Conference Center at Będlewo:

- Topics in Analysis and Holomorphic Dynamics (workshop) (Warsaw),
- Fractal Geometry and Dynamics (Będlewo),
- Ergodic Theory of Dynamical Systems (Będlewo),
- Translation Surfaces and Dynamics (Będlewo).

Here is the full list of mini-courses that took place in Warsaw within the semester:

- François Berteloot (Université Paul Sabatier, Toulouse): Bifurcations, currents and equidistribution phenomena in holomorphic dynamics.
- Peter Haissinsky (Université Paul Sabatier, Toulouse): Some topological characterizations of rational maps and Kleinian groups.

- Davoud Cheraghi (Imperial College London): Rigidity, near parabolic renormalization, and indifferent fixed points in complex dynamics.
- Károly Simon (Budapest University of Technology and Economics): Dimension theory of self-affine and almost self-affine sets and measures; fractal percolation.
- Antti Käenmäki (Jyväskylän University): Dynamics of the scenery flow and conical density theorems.
- Alexander Olevskii (Tel-Aviv University): Fourier quasicrystals.
- Marco Martens (SUNY, Stony Brook): Hénon renormalization.
- Zoltán Buczolich (Eötvös Loránd University, Budapest): Kakutani-Rokhlin towers, rotations, ergodic averages.
- François Ledrappier (University of Notre Dame and CNRS): Local limit theorem in negative curvature.
- Mark Pollicott (University of Warwick): Ergodic theory of hyperbolic flows.
- Lorenzo Díaz (PUC, Rio de Janeiro) & Anton Gorodetski (University of California, Irvine): Non-hyperbolic ergodic measures.
- Pierre Berger (CNRS, Paris 13): Differentiable dynamics near and far from homoclinic bifurcations.
- Yanqi Qiu (Aix-Marseille Université): The theory of determinantal point processes.
- Jörg Schmeling (University of Lund): Dimensional aspects in smooth dynamical systems.

*Feliks Przytycki*