

Toruń, March 6, 2023

## CURRICULUM VITAE

**Krzysztof Frączek**

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### EDUCATIONAL BACKGROUND

- Master of mathematics (master thesis: “Spectral properties of cocycles over rotations”), Nicolaus Copernicus University, 1995
- Doctor of mathematics (dissertation: “Spectral properties of dynamical systems”), Nicolaus Copernicus University, 1998
- Habilitation (dissertation: “Diffeomorphisms with polynomial growth of the derivative”), Nicolaus Copernicus University, 2005
- Title of professor, 2014

### CURRENT EMPLOYMENT

Professor, Nicolaus Copernicus University

### EMPLOYMENT HISTORY

1995-1999: Assistant, Nicolaus Copernicus University

1999-2008: Assistant Professor (Adiunkt), Nicolaus Copernicus University

2006-2009: Assistant Professor (Adiunkt), Institute of Mathematics Polish Academy of Sciences - one-third time position

2009-2010: Docent, Institute of Mathematics Polish Academy of Sciences - one-third time position

2008-2016: Associate Professor, Nicolaus Copernicus University

2016- : Professor, Nicolaus Copernicus University

### RESEARCH INTEREST

Ergodic theory and dynamical systems:

- (1) Spectral theory of dynamical systems.
- (2) Cohomology of cocycles:
  - ergodic properties of group extensions,
  - cocycles with values in Lie groups,
  - ergodicity problem of cocycles for infinite measure-preserving transformations.
- (3) Smooth ergodic theory:
  - special flows and smooth systems on low dimensional manifolds,
  - interval exchange transformations, translation flows on translation surfaces, Teichmüller dynamics,
  - parabolic diffeomorphisms, diffeomorphisms with polynomial growth of the derivative.

- homogenous dynamics, nilpotent flows.
- (4) Mathematical physics:
- billiards models, retro-reflector lenses,
  - Hamiltonian and locally Hamiltonian systems,
  - Poisson suspensions.
- (5) Dynamical systems in number theory:
- unique distribution of sequences, distribution of gaps,
  - Möbius disjointness conjecture of Sarnak,
  - prime number theorem for dynamical systems.

### **HONORS AND AWARDS**

- Honorable Mention of XXXI International Mathematical Olympiad, 1990, Beijing, China
- J. Marcinkiewicz Award of Polish Mathematical Society, 1995
- Scholarship of Polish Academy of Sciences, 1997/1998
- Scholarship of State Committee for Scientific Research, 1999
- Scholarship of Foundation for Polish Science, 1999
- Research Fellowship, Erwin Schrödinger International Institute for Mathematical Physics, 1999-2000, Vienna
- Research Fellowship, Polish Academy of Sciences, 2001-2002, Warsaw
- Stefan Banach Award of Polish Mathematical Society, 2015

### **SELECTED RESEARCH TALKS**

- Dynamical Systems Seminar, Erwin Schrödinger International Institute for Mathematical Physics, Vienna, 1999
- Séminaire de Théorie Ergodique et Systèmes Dynamiques, Université Paris 13, 2001
- Conference “Ergodic Theory and Dynamical Systems”, Paris, 2001
- Conference “Ergodic Theory and Dynamical Systems” in honour of 60th birthday of Professor Jan Kwiatkowski, Toruń, 2002
- Conference “Holomorphic Iteration, Non-uniform Hyperbolicity”, Warsaw, 2002
- Colloque de Théorie Ergodique, Amiens, France, 2002
- Dynamics and Geometry Seminar, Penn State University, State College, USA, 2004
- Conference “2005 International Conference on Dynamical Systems”, Huangshan City, China, 2005
- “Workshop on Ergodic Theory and Dynamical Systems”, Szklarska Poręba, Poland, 2006
- Geometry and Dynamics Seminar, Tel Aviv University, 2006
- Horowitz Seminar “Probability, Ergodic Theory and Dynamical Systems”, Tel Aviv University, 2006
- AMS-PTM Meeting, Warsaw, 2007
- Workshop “Dynamical Systems: Geometric Structures and Rigidity”, Będlewo, Poland, 2008
- Workshop “Geometric Group Theory, Hyperbolic Dynamics and Symplectic Geometry”, Oberwolfach, 2008
- Conference “Théorie Ergodique à Paris 13” on the occasion of the 60th birthday of François Parreau, Villetaneuse, 2008

- Seminar of the Institute for Applied Analysis, Ulm University, Germany, 2009
- Conference “Dynamical Systems, Jeseníky 2009”, Kouty nad Desnou, Czech Republic, 2009
- “One Day Ergodic Theory Meeting”, Queen Mary, University of London, 4 November 2009
- Ergodic Theory and Dynamical Systems Seminar, Bristol University, 2009
- Conference “Operator Theory and Applications: Perspectives and Challenges”, Polish Academy of Science, Jurata, Poland, 2010
- Conference “Dynamical Systems Meeting, Lower Silesia 2010”, Wroclaw University of Technology, Trzebieszowice, Poland, 2010
- Conference “Spectral Theory of Dynamical Systems”, Centrum Banacha, Warszawa, 2010
- Conference “Ergodic Theorems, Group Actions and Applications”, Eilat, Izrael, 2011
- Workshop “Modern Dynamics and its Interaction with Analysis, Geometry and Number Theory”, Będlewo, 2011
- Conference “Israeli-Polish Mathematical Meeting”, Łódź, 2011
- Seminar “Géométrie Dynamique”, Laboratoire Paul Painlevé, Lille, France, 2011
- Conference “Ergodic Methods in Dynamics” on the occasion of the 60th birthday of Feliks Przytycki, IMPAN, Będlewo, 2012
- Conference “Infinite Ergodic Theory Workshop”, University of Surrey, UK, 2012
- “Séminaire de Probabilités et Théorie Ergodique”, Université François Rabelais w Tours, France, 2012
- “FRUMAM Séminaire”, Université d’Aix-Marseille, France, 2013
- “German-Polish Joint Conference on Probability and Mathematical Statistics”, Nicolaus Copernicus University Toruń, Poland, 2013
- “Visegrad Conference on Dynamical Systems” University of Warmia and Mazury in Olsztyn, Poland, 2013 Olsztyn, Poland
- “Frontiers in Operators Dynamics” CIRM Luminy, France, 2015
- “Spectral Theory of Dynamical Systems and Related Topics”, CIRM Luminy, France, 2016
- “Workshop on Mathematical Billiards”, Sydney, Australia, 2019
- “Groupe de travail en Probabilités, Théorie Ergodique et Systemes Dynamiques”, Université de Rouen Normandie, 2020
- “Séminaire de Systemes Dynamiques-Paris”, 2020
- Conference “First Dynamical Systems Summer Meeting”, Będlewo, 2021
- “Special Year Research Seminar”, Institute for Advanced Studies, Princeton, 2022
- “Dynamical Systems Seminar”, University of Maryland, College Park, 2022
- “DynamIST Seminar”, Institute of Science and Technology Austria, Klosterneuburg, 2023
- “Seminari di Sistemi Dinamici”, Scuola Normale Superiore di Pisa, 2023

### VISITING POSITIONS

- Erwin Schrödinger International Institute for Mathematical Physics, Vienna, Post-doctoral Fellow, 1999-2000
- Universités Pierre et Marie Curie Paris VI, March 2001
- Institute of Mathematics of the Polish Academy of Sciences, Warsaw, Assistant Professor, 2001-2002

- Center for Dynamics and Geometry, Department of Mathematics, Pennsylvania State University, October-November 2004
- School of Mathematical Sciences, Tel Aviv University, November-December 2006
- Institute of Mathematics of the Polish Academy of Sciences, Warsaw, Assistant Professor, 2006-2010
- Université de Rennes 1, May 2009
- Ulm University, May-June 2009
- Bristol University, October-November 2009
- Université de Rennes 1, February 2010
- Université Lille 1, February-March 2011
- Université de Rennes 1, January-February 2012
- University of Bristol, August 2012
- Université de Tours, December 2012
- Université d'Aix-Marseille, May 2013
- University of Bristol, July 2013
- Max Planck Institute for Mathematics in Bonn, July 2014
- University of Bristol, July 2017
- Universität Zürich, January 2019
- Université de Rouen Normandie, January 2020
- Institute for Advanced Studies, Princeton, November 2022
- University of Maryland, College Park, November 2022
- Scuola Normale Superiore di Pisa, February/March 2023

### **PROFESSIONAL ACTIVITY**

- Chairman of the Scientific Board in Mathematics, Nicolaus Copernicus University, 2019-2024
- Leader of the research team "Dynamics and Ergodic Theory" in the framework of the University Centre of Excellence "Dynamics, mathematical analysis and artificial intelligence", Nicolaus Copernicus University, from 2020
- Vice Dean of Research, Faculty of Mathematics and Computer Science, Nicolaus Copernicus University, 2012-2020
- Member of the Senate of the Nicolaus Copernicus University, 2016-2019
- Member of the Ministry of Science and Higher Education committee on evaluation of research journals, 2019
- Head of Department of Ergodic Theory and Dynamical Systems, 2006-2012
- Member of the Editorial Committee of "Transactions of the American Mathematical Society" and "Memoirs of the American Mathematical Society", 2022-26
- Member of the Editorial Committee of "Colloquium Mathematicum"
- Member of Council for Mathematical Affairs (Komitet Matematyki) of Polish Academy of Sciences, 2016-2019
- Member of Scientific Council of Juliusz Schauder Center for Nonlinear Studies
- Member of the Jury of the Kuratowski Prize, 2011-2014
- Member of the Jury of the Stefan Banach Award, 2021-2023
- Panel member, National Science Center (NCN): ST1 panel - Opus, Sonata and Preludium grant; ST panel - Beethoven grant

### **ORGANIZATION OF CONFERENCES AND WORKSHOPS**

- Member of Organizing Committee, "Dynamical Systems: Geometric Structures and Rigidity", July 7 - July 26 2008, Będlewo, Poland

- Member of Organizing Committee, "International Conference on Dynamical Systems" on the occasion of the 60th birthday of Michał Misiurewicz, June 30 - July 5, 2008, Będlewo, Poland
- Member of Organizing Committee, Mini-semester "Modern Dynamics and its Interaction with Analysis, Geometry and Number Theory", 27.06-24.07.2011, Będlewo
- Member of Organizing Committee, Conference "Ergodic Theory and Dynamical Systems", 12-16.05.2014, Toruń
- Member of Organizing and Scientific Committees Simons Semester Workshops: "Ergodic Theory of Dynamical Systems" and "Translation Surfaces and Dynamics" 22-27.11.2015, Będlewo
- Member of Organizing Committee, Conference "Ergodic aspects of modern mathematics", 10-16.06.2018, Będlewo
- Member of Scientific Organizing Committee, Conference "Parabolic Flows: recent advances and new perspectives", 1-5.07.2019, Zurich
- Member of Organizing Committee, Conference "First Dynamical Systems Summer Meeting", Będlewo, 2021

### SUPERVISION

**Former PhD students:** Jacek Brzykcy (2012), Przemysław Berk (2018)

**Postdoc supervision:** Minsung Kim (2020/21), Jamerson Bezerra (2021/23)