

Agnieszka Zelerowicz

Email : axz157@psu.edu

EDUCATION

- ✦ Ph.D. in Mathematics, The Pennsylvania State University,
Defense expected in June 2019
Thesis Title: Thermodynamics of non-uniformly hyperbolic systems
Advisor: Prof. Yakov Pesin
- ✦ M.Sc. in Mathematics (Mathematics in Engineering), Warsaw University of Technology,
2013
Thesis Title: Dynamics of non-symmetric Hopfield neural networks
Advisor: Prof. dr hab. Grzegorz Świątek
- ✦ B.Sc. in Mathematics (Financial Mathematics), University of Białystok, 2011
Thesis Title: On decompositions of natural numbers into sums of squares
Advisor: Dr Małgorzata Hryniewicka

ACADEMIC AWARDS

- ✦ Pritchard Dissertation Fellowship, The Pennsylvania State University, 2018
- ✦ Rector Scholarship, University of Białystok, 2010
- ✦ Rector Scholarship, University of Białystok, 2009

PUBLICATIONS

- ✦ **Thermodynamics of some non-uniformly hyperbolic attractors**, A. Zelerowicz,
Nonlinearity, 30: 2612-2646, 2017
- ✦ **Time Rescaling of Lyapunov Exponents**, Y. Pesin, A. Zelerowicz, Y. Zhao (2017) In: Aranson
I., Pikovsky A., Rulkov N., Tsimring L. (eds) *Advances in Dynamics, Patterns, Cognition.*
Nonlinear Systems and Complexity, vol 20. Springer, Cham
- ✦ **Equilibrium States in Dynamical Systems via Geometric Measure Theory**, V. Climenhaga, Y.
Pesin, and A. Zelerowicz, *Bull. Amer. Math. Soc.* (2018). <https://doi.org/10.1090/bull/1659>
- ✦ **Thermodynamics via Inducing**, F. Shahidi and A. Zelerowicz,
J. Stat. Phys. (2019). <https://doi.org/10.1007/s10955-019-02256-w>
- ✦ **Equilibrium Measures for Some Partially Hyperbolic Systems**, V. Climenhaga, Y. Pesin, and
A. Zelerowicz (submitted for publication) [arXiv:1810.08663](https://arxiv.org/abs/1810.08663)

TECHNICAL REPORTS

(Industrial Mathematics)

- ✦ **Liquid interactions with porous media and the fate of toxic materials**, 85th European
Study Group with Industry in Norwich. Project report successfully completed for industry
(<http://www.cimr.uea.ac.uk/workshops/esgi85/liquid-interactions/report.pdf>)

- ✦ **Modeling of the process of triethylene glycol dehydration by the use of high power microwave generators**, Systems Research Institute Polish Academy of Sciences, Warsaw, 2012. Project report successfully completed for industry
- ✦ **A comprehensive analysis of possible reorganization of contractor's laboratory activities in the context of laboratory staff reduction**, Systems Research Institute Polish Academy of Sciences, Warsaw, 2011. Project report successfully completed for industry
- ✦ **Feasibility study of the model of glycol dehydration process by the use of a high power microwave generator**, Systems Research Institute Polish Academy of Sciences, Warsaw, 2011. Project report successfully completed for industry

TALKS GIVEN

- ✦ RTG Seminar on Geometry, Dynamics and Topology, University of Michigan, Ann Arbor, MI, January 2019
Title: Equilibrium measures for some partially hyperbolic systems,
- ✦ Dynamical Systems Seminar, Soochow University, Suzhou, China, December 2018
Title: Inducing schemes and their role in thermodynamics,
- ✦ Dynamical Systems Seminar, Soochow University, Suzhou, China, December 2018
Title: Equilibrium measures for some partially hyperbolic systems,
- ✦ Dynamical systems seminar, Northwestern University, Evanston, IL, October 2018,
Title: Equilibrium states in dynamical systems via geometric measure theory,
- ✦ Dynamical systems seminar, The Pennsylvania State University, State College, PA, October 2018,
Title: Scaled Ergodic Theorems,
- ✦ Dynamical Systems And Related Topics, 2018 International Congress Of Mathematics – Satellite Meeting, Universidade Federal da Bahia, Bahia, Brazil, August 2018
Title: Equilibrium states in dynamical systems via geometric measure theory,
- ✦ International Conference on Dynamical Systems, SUSTech, Shenzhen, China, June 2018
Title: Equilibrium states in dynamical systems via geometric measure theory,
- ✦ Ergodic aspects of modern dynamics, Będlewo, Poland, June 2018
Title: Equilibrium states in dynamical systems via geometric measure theory,
- ✦ Ergodic Theory and Statistical Mechanics Seminar, Princeton University, Princeton, NJ, April 2018,
Title: Inducing schemes and their role in thermodynamics,
- ✦ Semi-annual Workshop in Dynamical Systems and Related Topics, University of Maryland, College Park, MD, April 2018,
Title: Existence and Ergodic properties of equilibrium measures for maps associated with inducing schemes of hyperbolic type,
- ✦ Semi-annual Workshop in Dynamical Systems and Related Topics, The Pennsylvania State University, State College, PA, October 2017,
Title: A geometric approach for constructing equilibrium measures for some partially hyperbolic systems,
- ✦ Semi-annual Workshop in Dynamical Systems and Related Topics, University of Maryland, College Park, MD, April 2017,
Title: Characterization of equilibrium measures on hyperbolic sets via Caratheodory construction,
- ✦ Semi-annual Workshop in Dynamical Systems and Related Topics, The Pennsylvania State University, State College, PA, October 2016,
Title: Thermodynamics of some non-uniformly hyperbolic attractors,

- ✦ Seminar on Dynamical Systems, Institute of Mathematics Polish Academy of Sciences, Warsaw, Poland, May 2016,
Title: Thermodynamics of some non-uniformly hyperbolic attractors,
- ✦ Semi-annual Workshop in Dynamical Systems and Related Topics, University of Maryland, College Park, MD, April 2016,
Title: Thermodynamics of some non-uniformly hyperbolic attractors,
- ✦ Rocky Mountain Dynamical Systems Conference, Provo, UT, June 2015,
Title: Scaled Birkhoff sums,
- ✦ Semi-annual Workshop in Dynamical Systems and Related Topics, University of Maryland, College Park, MD, April 2015,
Title: Scaled Birkhoff sums,
- ✦ Seminar for Modeling of Continuous Media, Warsaw University of Technology, Koliba, Poland, June 2013
Title: Dynamics of non-symmetric Hopfield neural networks,
- ✦ Seminar for Modeling of Continuous Media, Warsaw University of Technology, Koliba, Poland, June 2012
Title: Modeling of TEG dehydration process in industrial conditions,
- ✦ Warsaw Science Festival, Institute of Mathematics Polish Academy of Sciences, Warsaw, Poland, September 2011
Title: How to break ciphers - a discussion on the example of Enigma rotors machine,
- ✦ Warsaw Science Festival, Institute of Mathematics Polish Academy of Sciences, Warsaw, Poland, September 2011
Title: Secret sharing that is how to avoid an accidental break of a third world war,

UNDERGRADUATE RESEARCH EXPERIENCE (Centre for Industrial Applications of Mathematics and Systems Engineering, Polish Academy of Sciences, Warsaw)

- ✦ **Undergraduate Researcher, October 2011 – 2013**
 - Work on 2 successfully completed research projects for industry:
 - MPO - dehydration process modeling
The project was devoted to modeling the process of triethylene glycol dehydration by using high power microwave generators.
 - PEARL - minimization of resources use in the energy sector
The project had been commissioned by a company of strategic national importance, which specializes in storage and transportation of liquid fuels in Poland. An important part of the project was to perform an extensive mathematical model of operation of the chain of fuel bases.
 - **Summer Research Practicals, July – September 2012**
preparation and organization of Practicals, co-leader of 2 projects
 - **Winter School, 23th-25th February 2012**
preparation and organization of workshops, co-leader of 2 projects
- ✦ **Intern, July – September 2011**
Participant in Summer Research Practicals

MEETINGS ATTENDED

- ✦ **Dynamics, Foliations, And Geometry In Dimension 3**, Matrix, Creswick, Australia
September 3 – 14, 2018
- ✦ **Dynamical Systems And Related Topics, 2018 International Congress Of Mathematics – Satellite Meeting**, Universidade Federal da Bahia, Bahia, Brazil, August 13 – 17, 2018
- ✦ **International Congress of Mathematicians (ICM 2018)**, Rio de Janeiro, Brazil, August 1 – 9, 2018
- ✦ **International Conference on Dynamical Systems**, SUSTech, Shenzhen, China, June 18-29, 2018
- ✦ **Ergodic aspects of modern dynamics**, Będlewo, Poland, June 10-16, 2018
- ✦ **Workshop in Dynamical Systems and Related Topics**, University of Maryland, College Park, MD, April 4 – 8, 2018, March 31 - April 2, 2017, April 15 – 17, 2016, April 18 – 20, 2015,
- ✦ **Semi-annual Workshop in Dynamical Systems and Related Topics**, The Pennsylvania State University, State College, PA, October 4 – 7, 2018, October 5 – 8, 2017, October 27 – 30, 2016, October 22 – 25, 2015, October 16 – 19, 2014,
- ✦ **Current Trends in Dynamical Systems and the Mathematical Legacy of Rufus Bowen**, University of British Columbia, Vancouver, Canada, July 30 – August 4 2017,
- ✦ **Workshop in Hyperbolic Dynamics**, ICTP, Trieste, Italy, June 19 – 23, 2017,
- ✦ **Dynamics Beyond Uniform Hyperbolicity - 2017 International Conference**, BYU, Provo, UT, June 5-16, 2017,
- ✦ **School on Algebraic, Geometric and Probabilistic Aspect of Dynamical Systems and Control Theory**, ICTP, Trieste, Italy, July 4 – 15, 2016,
- ✦ **Mixing Flows and Averaging Methods Thematic Programme**, Erwin Schrödinger International Institute for Mathematics and Physics, Vienna, Austria, April 17 - 29, 2016,
- ✦ **ICERM Semester Program on Dimension and Dynamics**, ICERM, Brown University, Providence, RI, February 1 - May 6, 2016,
- ✦ **School and Conference on Dynamical Systems**, ICTP, Trieste, Italy, July 20- August 7 2015,
- ✦ **Rocky Mountain Dynamical Systems Conference**, BYU, Provo, UT, June 8 - 11, 2015,
- ✦ **Houston Summer School on Dynamical Systems**, University of Houston, Houston, TX, May 20 – 28, 2015,
- ✦ **85th European Study Group with Industry**, University of East Anglia, Norwich, April 16 – 20, 2012
- ✦ **Torunian Summer School of Mathematics**, Nicolaus Copernicus University, Toruń, Poland, August 23 – 27, 2010

TEACHING EXPERIENCE (At The Pennsylvania State University)

- ✦ Finite Mathematics (Math 17)
- ✦ College Algebra I (Math 21)
- ✦ College Algebra II (Math 22)
- ✦ Trigonometry and Analytic Geometry (Math 41)
- ✦ Calculus and Vector Analysis (Math 230)
- ✦ Geometry of infinite dimensional spaces (functional analysis and its applications) - Teaching Assistant in the PSU MASS Program

PROFESSIONAL SERVICE

✦ Peer referee: Journal of Dynamical and Control Systems