

ALENA ERCHENKO

510 Simons Center for Geometry and Physics \diamond Stony Brook University \diamond Stony Brook, NY, 11794

EMPLOYMENT

Stony Brook University/The Simons Center for Geometry and Physics 2019 - present
RTG Postdoctoral Fellow of Mathematics

The Ohio State University 2018 - 2019
Zassenhaus Assistant Professor

EDUCATION

The Pennsylvania State University 2012-2018
Ph.D. Candidate in Mathematics
Advisor: Anatole Katok (deceased in April 2018)

Lomonosov Moscow State University 2007-2012
Faculty of Mechanics and Mathematics, Department of Differential Equations
Specialist (M.S.) in Mathematics
Faculty of Pedagogical Education, Qualification: Teacher
Diplomas with Honors

PUBLICATIONS

Unique equilibrium states for geodesic flows on flat surfaces with singularities (with Benjamin Call, David Constantine, Noelle Sawyer, and Grace Work), preprint, arXiv:2101.11806.

Riemannian Anosov extension and applications (with Dong Chen and Andrey Gogolev), preprint, arXiv:2009.13665.

Flexibility of Lyapunov exponents with respect to two classes of measures on the torus, to appear in *Ergod. Th. & Dynam. Sys.*(online).

Geometry in a fixed conformal class (with Thomas Barthelmé), to appear in *Annales de l'Institut Fourier* (online).

Exceptional directions for the Teichmüller geodesic flow and Hausdorff dimension (with Hamid Al-Saqban, Paul Apisa, Osama Khalil, Shahriar Mirzadeh, and Caglar Uyanik), *J. Eur. Math. Soc.*, Volume 23, 2021, 1423 – 1476.

Flexibility of entropies for surfaces of negative curvature (with Anatole Katok), *Isr. J. Math.*, Volume 232, Issue 2, 2019, 631 – 676.

Flexibility of Lyapunov exponents for expanding circle maps, *Discrete & Contin. Dyn. Syst.-A* 39(5), 2019, 2325 – 2342.

Flexibility of geometric and dynamical data in fixed conformal classes (with Thomas Barthelmé), *Indiana Univ. Math. J.*, Volume 69, Issue 2, 2020, 513 – 540.

Lyapunov Reducibility of Infinitesimal Perturbations of Equations and Systems, *Journal of Mathematical Sciences*, Vol. 210, 2 (October, 2015), 200–209. (Translated from Trudy Seminara imeni I. G. Petrovskogo, No. 30, Part I (2014) 145–160)

INVITED TALKS

- Analysis & Math Physics Seminar, Virginia Tech University.
“Riemannian Anosov extensions and applications” Fall 2021
- Geometry Seminar, Indiana University Bloomington.
“Riemannian Anosov extensions and applications” Fall 2021
- Workshop on Dynamical Systems and Related Topics, The University of Maryland.
“Riemannian Anosov extension” Spring 2021
- Dynamics, Geometry, & Groups Seminar, Queen’s University, Canada.
“Riemannian Anosov extension” Spring 2021
- Resistência Dinâmica, PUC-Rio, Brazil.
“Flexibility of Lyapunov exponents with respect to two classes of measures” Spring 2021
- Interuniversity scientific seminar on the qualitative theory of differential equations (Lomonosov Moscow State University, Plekhanov Russian University of Economics, Bauman Moscow State Technical University), Russia
“Riemannian Anosov extension” Fall 2020
- Online geometry seminar, ETH Zürich.
“Flexibility and obstructions in a fixed conformal class” Spring 2020
- Virtual Dynamical Systems Seminar, The University of Maryland.
“Flexibility of Lyapunov exponents with respect to two classes of measures” Spring 2020
- Midwest Dynamical Systems Meeting, University of Illinois at Chicago.
“Flexibility of Lyapunov exponents with respect to two classes of measures on the torus” Fall 2019
- Dynamical Systems Seminar, Stony Brook.
“Flexibility of Lyapunov exponents with respect to two classes of measures on the torus” Fall 2019
- 2020 Vision for Dynamics, Bedlewo (Poland).
“Flexibility of Lyapunov exponents on the torus.” Summer 2019.
- Dynamics Beyond Uniform Hyperbolicity, CIRM.
“Flexibility and obstructions in a fixed conformal class.” Summer 2019.
- Midwest Dynamical Systems Early Career Conference,
The Ohio State University, “Flexibility and obstructions in a fixed conformal class.” Summer 2019
- Ergodic Theory Seminar, The Ohio State University.
“Flexibility of Lyapunov exponents on the torus.” Spring 2019.
- Dynamical Systems Seminar, The University of Houston.
“Flexibility of entropies for negatively curved surfaces and geometry in a fixed conformal class” Fall 2018
- Junior Geometry & Topology workshop, University of Wisconsin-Madison.
“Flexibility, negative curvature, and conformal classes” Fall 2018
- Dynamical Systems Seminar, Stony Brook.
“Flexibility of Lyapunov exponents on the circle and the torus.” Fall 2018
- Welcome Mathematics Seminar, The Ohio State University.
“ Flexibility of entropies for negatively curved surfaces and geometry in a fixed conformal class” Fall 2018

Dynamical Systems Seminar, Stony Brook.
“Flexibility, negative curvature, and conformal classes” Spring 2018

AMS Sectional Meeting on “Interactions between Geometry,
Group Theory and Dynamics”, Vanderbilt University.
“Flexibility questions in dynamical systems and their connections with geometry” Spring 2018

Einstein Chair Mathematics Seminar, CUNY.
“Flexibility questions in dynamical systems and first results” Spring 2018

Group Actions and Dynamics, Yale University.
“Flexibility of some dynamical and geometrical data” Fall 2017

Dynamical Systems Seminar, Northwestern University.
“Flexibility of some dynamical and geometrical data” Fall 2017

Dynamics Seminar, The University of Chicago.
“Flexibility of some dynamical and geometrical data” Fall 2017

Topology Seminar, The University of Michigan.
“Flexibility of some dynamical and geometrical data” Fall 2017

Workshop in Dynamical Systems and Related Topics, The Pennsylvania State University
“Flexibility questions in fixed conformal classes” Fall 2017

Max Dehn Seminar on Geometry, Topology, Dynamics, and Groups, The University of Utah.
“Flexibility of some dynamical and geometrical data” Fall 2017

Conference on Dynamics in Number Theory and Geometry, Queen’s University, Kingston.
“Hausdorff dimensions of special sets for Teichmüller geodesic flow” Summer 2017

Montreal Analysis Seminar, McGill University, Quebec.
“A flexibility program in dynamical systems and first results” Spring 2017

Maryland-Penn State Dynamical Systems and Related Topics Workshop, The University of Maryland.
“A flexibility result for expanding maps on S^1 ” Spring 2017

Dynamics Seminar, Queen’s University, Kingston.
“The flexibility program and entropies for surfaces of negative curvature” Fall 2016

Dynamical Systems Seminar, The Pennsylvania State University.
“Flexibility of topological and metric entropies for surfaces of negative curvature” Fall 2015

The dynamical systems, ergodic theory, and probability conference dedicated to the memory of Nikolai
Chernov, The University of Alabama at Birmingham.
“Topological and metric entropies for surfaces of negative curvature” Spring 2015

Maryland-Penn State Dynamical Systems and Related Topics Workshop, The University of Maryland.
“Topological and metric entropies for surfaces of negative curvature” Spring 2014

Research seminar “Dynamical Systems” under the guidance of D.V. Anosov and A.M. Stepin, Steklov
Mathematical Institute Russian Academy of Sciences.
“Coincidence of sets of Lyapunov functionals’ values for linear systems and equations” Fall 2012
“Around homological equations and around non-integrability of Jouanolou system”

Qualitative Theory of Ordinary Differential Equations Seminar, Lomonosov Moscow State University.
“Coincidence of Izobov’s exponents for linear systems and equations” 2011

TEACHING

Sole Instructor (Stony Brook University)

MAT 211: Introduction to Linear Algebra Fall 2021
MAT 310: Linear Algebra Spring 2021
MAT 351: Differential Equations: Dynamics and Change Spring 2020
MAT 200: Logic, Language and Proof Fall 2019

Sole Instructor (The Ohio State University)

MATH 3345: Foundations of Higher Mathematics Spring 2019
MATH 2177: Mathematical Topics for Engineers Autumn 2018

Sole Instructor (The Pennsylvania State University)

MATH 220: Matrices Spring 2018
MATH 232: Vector Calculus Spring 2017
MATH 251: Ordinary and Partial Differential Equations Spring 2016, Spring 2015, Fall 2015
MATH 230: Calculus and Vector Analysis Spring 2014

Teaching Assistant (The Pennsylvania State University)

MATH 497C: Affine and Projective Geometries Fall 2014
MATH 110: Techniques of Calculus I Fall 2013

Grader (The Pennsylvania State University)

MATH 502: Complex Analysis Spring 2017

PROFESSIONAL SERVICE

Co-organizer of the workshop “Flexibility and rigidity in dynamical systems”,
Simons Center for Geometry and Physics March 7-11, 2022

Talk on Radical Pi Seminar for undergraduates,
The Ohio State University, “Benford’s Law and dynamical systems” Spring 2019

Organizer of the Reading Dynamical Systems Seminar,
The Ohio State University Autumn 2018

Organizer of the Student Dynamical Systems Seminar,
The Pennsylvania State University Spring 2017

Co-organizer of the Working Seminar: Dynamics and its Working Tools,
The Pennsylvania State University Spring 2017

Referee for the journals *Discrete and Continuous Dynamical Systems*, *Ergodic Theory and Dynamical Systems*, *Dynamical Systems: an International Journal*, *Proceedings of the American Mathematical Society*

AWARDS

NSF Conference Grant DMS-2154392 2021
“Conference: Flexibility and Rigidity in Dynamical Systems”

SQuaRE “Thermodynamic Formalism for CAT(0) Spaces” with Benjamin Call, Dave Constantine, Noelle Sawyer, and Grace Work, American Institute of Mathematics	2021-TBD
2019 NSF-AWM Travel Grant	February 2019 Cycle
NSF Mathematical Sciences Postdoctoral Research Fellowship	2019(declined)
Pritchard Dissertation Fellowship	Fall 2017
Charles H. Hoover Memorial Award (Teaching Award)	2015-2016
Department of Mathematics Teaching Award, The Pennsylvania State University	Fall 2015
Cada R. and Susan Wynn Grove Mathematics Enhancement Endowment	2015-2016
Vollmer-Kleckner Scholarship in Science	2014-2015, 2017-2018
Merit Award, The Pennsylvania State University	2012
University Graduate Fellowship, The Pennsylvania State University	2012-2013
Winner of the international Olympiad “Lomonosov” for undergraduates in Partial Differential Equations	2010
Award of Russian Federation Ministry of Education and Science. Order №1031	2010
Diploma (II degree) on the Olympiad for undergraduates in Ordinary Differential Equations	2009

CONFERENCES AND WORKSHOPS

Semi-annual Workshop in Dynamical Systems and Related Topics, The University of Maryland	2021
Dynamics on your screen,	2020
Semi-annual Workshop in Dynamical Systems and Related Topics, The Pennsylvania State University	2019
Conference “2020 Vision for Dynamics”, Bedlewo	2019
Workshop “Equilibrium states for dynamical systems arising from geometry”, AIM	2019
Conference “Analytic Low-Dimensional Dynamics: a celebration of Misha Lyubich’s 60th birthday”, The Fields Institute	2019
Conference “Dynamics Beyond Uniform Hyperbolicity”, CIRM	2019
Junior Geometry & Topology workshop, University of Wisconsin-Madison	2018
Semi-annual Workshop in Dynamical Systems and Related Topics, The Pennsylvania State University and The University of Maryland	2012-2017
Conference on Dynamics in Number Theory and Geometry, Queen’s University.	2017
Mathematical Research Communities “Dynamical Systems: Smooth, Symbolic, and Measurable.”	2017
International conference “Dynamics Beyond Uniform Hyperbolicity,” Provo.	2017
The dynamical systems, ergodic theory, and probability conference dedicated to the memory of Nikolai Chernov, The University of Alabama at Birmingham.	2015
Workshop “Advances in Homogeneous Dynamics,” MSRI.	2015
Houston Summer School on Dynamical Systems, The University of Houston.	2014, 2015

Conference “Group, Numbers and Dynamics,” Isaac Newton Institute for Mathematical Sciences. 2014

Conference “Probability in Dynamics,” Instituto de Matemática-Universidade Federal do Rio de Janeiro. 2014

Summer School “Rigidity and group actions,” Mathematical Institute of Jussieu. 2013

International conference “Dynamics Beyond Uniform Hyperbolicity,” Stefan Banach International Mathematical Center. 2013

REU, The Pennsylvania State University, Department of Mathematics. 2011

The Kupcinet-Getz International Summer Science School, Weizmann Institute of Science, Department of Mathematics. 2010

LANGUAGES

Russian (native), English (fluent)