

Curriculum Vitae

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Academic Positions

- 2020-present Professor, Department of Mathematics,
The Pennsylvania State University;
- 2012-2020 Associate Professor, Department of Mathematics,
The Pennsylvania State University;
- 2007-2012 Associate Professor, Department of Mathematics
and Statistics, University of South Alabama;
- 2003-2007 Assistant Professor, Department of Mathematics and Statistics,
University of South Alabama;
- 2000-2003 Postdoctoral Assistant Professor, Department of Mathematics,
University of Michigan, Ann Arbor.

Education

- 2000 Ph.D. in Mathematics, The Pennsylvania State University,
- 1995 B.S. in Mathematics (Diploma with distinction),
St. Petersburg State University, Russia.

Awards

- National Science Foundation individual grant DMS-0140513, 2002-2006
- National Science Foundation individual grant DMS-0701292, 2007-2011
- National Science Foundation individual grant DMS-1101150, 2011-2014
- Simons Foundation individual grant 426243, 2016-2021
- Simons Foundation individual grant 855238, 2021-2026

Professional Organizations: Member of the American Mathematical Society.

Research Interests: Dynamical systems, smooth ergodic theory, group actions.

Publications (available on my web page)

- *On regularity of conjugacy between linear cocycles over partially hyperbolic systems.* (with V. Sadovskaya) Discrete and Cont. Dynamical Systems, to appear.
- *Non-stationary normal forms for contracting extensions.* To appear in *A Vision for Dynamics in the 21st Century: The Legacy of Anatole Katok*, Cambridge University Press, 2024.
- *Smooth local rigidity for hyperbolic toral automorphisms.* (with V. Sadovskaya, Z. Wang) Communications of the American Mathematical Society, 3 (2023), 290-328.
- *Center foliation rigidity for partially hyperbolic toral diffeomorphisms.* (with A. Gogolev and V. Sadovskaya) Mathematische Annalen, 387 (2023), 1579-1602.
- *Local rigidity for hyperbolic toral automorphisms.* (with V. Sadovskaya and Z. Wang) Mathematics Research Reports, Vol 3 (2022), 57-68.
- *Local rigidity of Lyapunov spectrum for toral automorphisms.* (with A. Gogolev and V. Sadovskaya) Israel Journal of Math., **238** (2020), 389-403.
- *Periodic approximation of Lyapunov exponents for Banach cocycles.* (with V. Sadovskaya) Ergodic Theory and Dynamical Systems, **39** (2019) no. 3, 689-706.
- *Lyapunov exponents of cocycles over non-uniformly hyperbolic systems.* (with V. Sadovskaya) Discrete and Cont. Dynamical Systems, **38** (2018), no. 10, 5105-5118.
- *Boundedness, compactness, and invariant norms for Banach cocycles over hyperbolic systems.* (with V. Sadovskaya) Proceedings of the AMS **146** (2018), no. 9, 3801-3812.
- *Normal forms for non-uniform contractions.* (with V. Sadovskaya) Journal of Modern Dynamics, **11** (2017), 341-368.
- *Normal forms on contracting foliations: smoothness and homogeneous structure.* (with V. Sadovskaya) Geometriae Dedicata, **183** (2016), no. 1, 181-194.
- *Holonomies and cohomology for cocycles over partially hyperbolic diffeomorphisms.* (with V. Sadovskaya) Discrete and Continuous Dynamical Systems. **36** (2016), no. 1, 245-259.
- *Global rigidity of higher rank Anosov actions on tori and nilmanifolds.* (with D. Fisher and R. Spatzier; appendix by James F. Davis) Journal of the American Mathematical Society, **26** (2013), no. 1, 167-198.
- *Linear cocycles over partially hyperbolic systems.* (with V. Sadovskaya) Geometriae Dedicata, **167**, (2013), 167-188.
- *Nonuniform measure rigidity* (with A. Katok and F. Rodriguez Hertz) Annals of Mathematics. **174** (2011), no. 1, 361-400.

- *Livšic theorem for matrix cocycles*
Annals of Mathematics. **173** (2011), no. 2, 1025–1042.
- *Local rigidity for Anosov automorphisms* (with A. Gogolev and V. Sadovskaya)
Mathematical Research Letters, **18** (2011), no. 5, 843–858.
- *Totally non-symplectic Anosov actions on tori and nilmanifolds*
(with D. Fisher and R. Spatzier) Geometry and Topology **15** (2011), 191–216.
- *Linear cocycles over hyperbolic systems and criteria of conformality*
(with V. Sadovskaya) Journal of Modern Dynamics, **4** (2010), no. 3, 419–441.
- *On Anosov diffeomorphisms with asymptotically conformal periodic data* (with V. Sadovskaya) Ergodic Theory and Dynamical Systems **29** (2009), no. 1, 117–136.
- *New progress in nonuniform measure and cocycle rigidity*
(with A. Katok and F. Rodriguez Hertz) Electronic Research Announcements in Mathematical Sciences, **15** (2008), 79–92.
- *On classification of resonance-free Anosov \mathbb{Z}^k actions* (with V. Sadovskaya)
Michigan Mathematical Journal, **55** (2007), no. 3, 651–670.
- *Measure rigidity beyond uniform hyperbolicity: Invariant measures for Cartan actions on tori* (with A. Katok) Journal of Modern Dynamics, **1** (2007), 123–146.
- *On the classification of Cartan actions* (with R. Spatzier)
GAFA Geometric and Functional Analysis. **17** (2007), 468–490.
- *Global rigidity for totally nonsymplectic Anosov \mathbb{Z}^k actions* (with V. Sadovskaya)
Geometry and Topology, **10** (2006), 929–954.
- *Rigidity of the measurable structure for algebraic actions of higher rank abelian groups* (with R. Spatzier) Ergodic Theory and Dynamical Systems, **25** (2005), no. 1, 175–200.
- *On local and global rigidity of quasiconformal Anosov diffeomorphisms*
(with V. Sadovskaya) Journal of the Institute of Mathematics of Jussieu, **2** (2003), no. 4, 567–582.
- *Measurable rigidity and disjointness for \mathbb{Z}^k actions by toral automorphisms*
(with A. Katok) Ergodic Theory and Dynamical Systems, **22** (2002), no. 2, 507–523.
- *On pointwise dimension of nonhyperbolic measures* (with V. Sadovskaya)
Ergodic Theory and Dynamical Systems, **22** (2002), no. 6., 1783–1801.
- *Invariant measures for actions of higher rank abelian groups* (with A. Katok) Proceedings of Symposia in Pure Mathematics, Vol. **69** (2001), 593–637.
- *Smoothness and singularities of convex hypersurfaces* (with Yu. Burago)
St. Petersburg Mathematical Journal, **8** (1997), no. 3, 399–411.

- *Remarks on a theorem of Newman* (with Yu. Burago)
Siberian Mathematical Journal, **36** (1995), no. 5, 869–872.

Teaching

The Pennsylvania State University, 2012 - present:

- MATH 530 *Differential Geometry*, Spring 2023.
- MATH 506 *Ergodic Theory*, Spring 2015, 2021.
- MATH 502 *Complex Analysis*, Spring 2020.
- MATH 497B *Elements of Functional Analysis*, Fall 2013.
- MATH 437 *Algebraic Geometry*, Fall 2022.
- MATH 436 *Linear Algebra*, Spring 2016, Fall 2021, Fall 2023.
- MATH 429 *Introduction to Topology*, Spring 2020.
- MATH 403H *Honors Classical Analysis I*, Fall 2012, 2016, 2020.
- MATH 403 *Classical Analysis I*, Fall 2014.
- MATH 401 *Introduction to Analysis*, Spring 2017, Fall 2022.
- MATH 313H *Honors Concepts of Geometry*, Spring 2013.
- MATH 312H *Honors Concepts of Real Analysis*, Spring 2014.
- MATH 312 *Concepts of Real Analysis*, Spring 2014, 2017, 2022, Fall 2015, 2017.

University of South Alabama, 2003 - 2012:

- MA 537 *Complex Analysis*, Spring 2006.
- MA 536 *Real Analysis II*, Spring 2011.
- MA 535 *Real Analysis I*, Fall 2010.
- MA 508 *Applicable Mathematics II*, Fall 2003, 2008, Spring 2006, 2007.
- MA 504 *Introduction to Geometry*, Spring 2008.
- MA 501 *Number Systems*, Fall 2005.
- MA 494 *Independent Studies*, Spring 2005.
- MA 437 *Complex Variables*, Spring 2006.
- MA 335 *Advanced Calculus II*, Spring 2009.
- MA 334 *Advanced Calculus I*, Fall 2008.
- MA 321 *Elementary Geometry*, Spring 2008.
- MA 316 *Linear Algebra II*, Spring 2007, Spring 2012.
- MA 237 *Linear Algebra I*, Fall 2006, Fall 2007.
- MA 150 *Contemporary Mathematics Seminar*, Fall 2007.
- MA 125 *Calculus I*, Fall 2003, '05, '06, '10, '11, Spring 2004, '05, '11, '12.
- MA 113 *Precalculus Trigonometry*, Spring 2007.
- MA 112 *Precalculus Algebra*, Spring 2004, Fall 2004, Spring 2005.
- MA 110 *Finite Mathematics*, Spring 2009.

Teaching at the University of Michigan, 2000 - 2003:

- Math 490 *Introduction to Topology*, Winter 2003.
- Math 425 *Introduction to Probability*, Winter 2001, Winter 2003.
- Math 116 *Calculus II*, Winter 2001, Winter 2002, Fall 2002.

- Math 115 *Calculus I*, Fall 2000, Fall 2001.

Committee service

The Pennsylvania State University, 2012 - present:

- Launch Committee for new faculty, 2023
- Graduate Studies Committee, 2022 - present
- Undergraduate Scholarships Committee, 2020 - present
- Ph.D. and Comprehensive Exam Committees, 2013 - present
- Undergraduate Studies Committee, 2016 - 2022
- Qualifying Examinations Committee, 2015 - 2016, 2020 - January 2022.
- GTA Oversight Committee, 2012 - 2015

University of South Alabama, 2003-2012.

Service on college-level committees.

- Academic Programs and Planning Committee, 2010-2012.
- Summer Professional Development Awards Committee, 2006-2007.
- Support and Development Awards Committee, 2004-2005.

Service on departmental committees.

- Advisory Committee, 2007-2009, 2010-2011 (Chair).
- Assessment Committee, 2007-2009.
- Graduate Committee, 2006-2009, 2010-2012.
- Hiring Committee, 2005-2006, 2010-2011 (Chair).
- Library Committee (Chair), 2003-2004.
- Student Affairs Committee, 2004-2005.
- Reappointment committees.
- Textbook selection committees.