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)

- *Global smooth rigidity for toral automorphisms.* (with V. Sadovskaya and Z. Wang). Submitted.

- *On regularity of conjugacy between linear cocycles over partially hyperbolic systems.* (with V. Sadovskaya) Discrete and Cont. Dynamical Systems, **44** (2024), no. 5, 1287-1303.

- *Non-stationary normal forms for contracting extensions. A Vision for Dynamics in the 21st Century*, pp. 207-231, 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, **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.

- *Cocycles with one exponent 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, **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
- Nontenureline Faculty Promotions Committee,   2023 - present
- 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.