CURRICULUM VITAE

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Research Interests

Dynamical systems and ergodic theory, in particular smooth dynamics and rigidity of hyperbolic and partially hyperbolic systems and group actions, cocycles over dynamical systems, dimension theory.

Academic Positions

2021 - present	Professor, Department of Mathematics, The Pennsylvania State University.
2012 - 2021	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, advisor Professor Yakov Pesin.
1995	B.S. in Mathematics (Diploma with distinction), St. Petersburg State University, Russia.

Grants and Awards

- Simons Foundation grant MP-TSM-00002874, 09/2023 - 08/2028.
- National Science Foundation grant DMS-1764216, 06/2018 - 05/2022 (sole PI).
- National Science Foundation grant DMS-1301693, 06/2013 - 05/2017 (sole PI).
- National Science Foundation grant DMS-0901842, 08/2009 - 07/2012 (sole PI).
- National Science Foundation grant DMS-0401014, 07/2004 - 06/2008 (sole PI).
- 2022 C.I. Noll Award for Excellence in Teaching, Eberly College of Science, Penn State.
- Donald C. Rung Award for Distinguished Undergraduate Teaching in Mathematics, Department of Mathematics, Penn State, 2017.
- Teresa Cohen Service Award, Department of Mathematics, Penn State, 2015.

Professional Membership: Member of the American Mathematical Society.

Publications and preprints

Available at https://vsadovskaya.github.io/Papers/papers.html

- *Rigidity of strong and weak foliations.* (with B. Kalinin) Submitted.
- *Global smooth rigidity for toral automorphisms.* (with B. Kalinin and Z. Wang) Submitted.
- *On regularity of conjugacy between linear cocycles over partially hyperbolic systems.* (with B. Kalinin) Discrete & Continuous Dynamical Systems, vol. 44, no. 5 (2024), 1287-1303.
- *Linear cocycles over hyperbolic systems.* In "A Vision for Dynamics in the 21st Century," pp. 384-434, Cambridge University Press, 2024.
- *Smooth local rigidity for hyperbolic toral automorphisms.* (with B. Kalinin and Z. Wang) Communication of the AMS, vol. 3 (2023), 290-328.
- *Center foliation rigidity for partially hyperbolic toral diffeomorphisms.* (with A. Gogolev and B. Kalinin) Mathematische Annalen, **387** (2023), 1579-1602.
- *Local rigidity for hyperbolic toral automorphisms.* (with B. Kalinin and Z. Wang) Mathematics Research Reports, Vol. 3 (2022), 57-68.
- *Diffeomorphism cocycles over partially hyperbolic systems.* Ergodic Theory and Dynamical Systems. Vol. 42, Issue 1 (2022), 263-286.
- *Local rigidity of Lyapunov spectrum for toral automorphisms.* (with A. Gogolev and B. Kalinin) Israel Journal of Mathematics, **238** (2020), 389-403.
- *Boundedness and invariant metrics for diffeomorphism cocycles over hyperbolic systems.* Geometriae Dedicata, Vol. 202, Issue 1 (2019), 401-417.
- *Periodic approximation of Lyapunov exponents for Banach cocycles.* (with B. Kalinin) Ergodic Theory and Dynamical Systems, **39** (2019), no. 3, 689-706.
- *Lyapunov exponents of cocycles over non-uniformly hyperbolic systems.* (with B. Kalinin) Discrete and Continuous Dynamical Systems, vol. 38, no. 10 (2018), 5105-5118.
- *Boundedness, compactness, and invariant norms for Banach cocycles over hyperbolic systems.* (with B. Kalinin) Proceedings of the AMS, vol. 146, no. 9 (2018), 3801-3812.
- *Fiber bunching and cohomology for Banach cocycles over hyperbolic systems.* Discrete and Continuous Dynamical Systems, vol. 37, no. 9 (2017), 4959-4972.
- *Normal forms for non-uniform contractions.* (with B. Kalinin) Journal of Modern Dynamics, vol. 11 (2017), 341-368.
- *Normal forms on contracting foliations: smoothness and homogeneous structure.* (with B. Kalinin) Geometriae Dedicata, Vol. 183, Issue 1 (2016), 181-194.
- *Holonomies and cohomology for cocycles over partially hyperbolic diffeomorphisms.* (with B. Kalinin) Discrete and Continuous Dynamical Systems, vol. 36, no. 1 (2016), 245-259.
- *Cohomology of fiber bunched cocycles over hyperbolic systems.* Ergodic Theory and Dynamical Systems, Vol. 35, Issue 8 (2015), 2669-2688.
- *Cocycles with one exponent over partially hyperbolic systems.* (with B. Kalinin) Geometriae Dedicata, vol. 167, Issue 1 (2013), 167-188.
- *Cohomology of $GL(2,\mathbb{R})$-valued cocycles over hyperbolic systems.* Discrete and Continuous Dynamical Systems, vol. 33, no. 5 (2013), 2085-2104.
- *Local rigidity for Anosov automorphisms.* (with A. Gogolev and B. Kalinin; appendix by R. de la Llave) Mathematical Research Letters, **18** (2011), no. 5, 843-858.
- *Linear cocycles over hyperbolic systems and criteria of conformality.* (with B. Kalinin) Journal of Modern Dynamics, vol. 4 (2010), no. 3, 419-441.

- *Dimensional characteristics of invariant measures for circle diffeomorphisms.* Ergodic Theory and Dynamical Systems, **29** (2009), no. 6, 1979-1992.
- *On Anosov diffeomorphisms with asymptotically conformal periodic data.* (with B. Kalinin) Ergodic Theory and Dynamical Systems, **29** (2009), no. 1, 117-136.
- *On the classification of resonance-free Anosov $\mathbb{Z}^k$ actions.* (with B. Kalinin) Michigan Mathematical Journal, vol. 55 (2007), no. 3, 651-670.
- *Global rigidity for totally nonsymplectic Anosov $\mathbb{Z}^k$ actions.* (with B. Kalinin) Geometry and Topology, vol. 10 (2006), 929-954.
- *On the regularity of integrable conformal structures invariant under Anosov systems.* (with R. de la Llave) Discrete and Continuous Dynamical Systems, vol. 12 (2005), no. 3, 377-385.
- *On uniformly quasiconformal Anosov systems.* Mathematical Research Letters, vol. 12 (2005), no. 3, 425-441.
- *On local and global rigidity of quasiconformal Anosov diffeomorphisms.* (with B. Kalinin) Journal of Institute of Mathematics of Jussieu, **2** (2003), no. 4, 567-582.
- *On pointwise dimension of non-hyperbolic measures.* (with B. Kalinin) Ergodic Theory and Dynamical Systems, **22** (2002), no. 6, 1783-1801.
- *Multifractal analysis of conformal Axiom A flows.* (with Ya. Pesin) Communications in Mathematical Physics (2001), 216, 277-312.

Talks, 2017-present

Talks at conferences and meetings

- *Smooth rigidity for toral automorphisms.* AMS Sectional Meeting at Tulane University, 10/4/2025.
- *Global rigidity for toral automorphisms.* Mathematical Congress of the Americas 2025, special session on Partially Hyperbolic Dynamical Systems. Miami, 7/25/2025.
- *On regularity of conjugacy between linear cocycles over partially hyperbolic systems.* AMS Sectional Meeting at the University of California, Riverside, 10/26/2024.
- *Smooth local rigidity for hyperbolic toral automorphisms.* AMS Sectional Meeting at University of Texas, San Antonio, 9/14/2024.
- *Continuity of a measurable conjugacy between linear cocycles.* Workshop: Actions of large groups, geometric structures, and the Zimmer program. Institut Henri Poincaré, Paris, France, 6/11/2024.
- *Cocycles and local rigidity for partially hyperbolic systems.* Mini-course. Summer School: Partial Hyperbolicity & Related Topics. Brin Mathematics Research Center, University of Maryland, 5/30-6/2, 2023.
- *Local rigidity for hyperbolic toral automorphisms.* Houston Workshop on Hyperbolic Dynamical Systems, 5/22.
- *Cohomology of diffeomorphism cocycles over partially hyperbolic systems.* Ergodic Theory Workshop, UNC at Chapel Hill, 6/21.
- *Group-valued cocycles over hyperbolic systems and their periodic data.* 2020 Vision for Dynamics Conference, Bedlewo, Poland 8/19.
- *Cocycles with bounded periodic data.* Conference in Smooth Dynamical Systems, Mittag-Leffler Institute, Sweden, 5/19.
- *Boundedness and invariant metrics for diffeomorphism cocycles over hyperbolic systems.* Workshop in Dynamical Systems & Related Topics, University of Maryland, 4/19.

- *Boundedness and invariant metrics for diffeomorphism cocycles over hyperbolic systems.* Ergodic Theory Workshop, UNC at Chapel Hill, 1/19.
- *Boundedness and invariant norms for cocycles over hyperbolic systems.* Ergodic Theory Workshop, UNC at Chapel Hill, 4/18.
- *Lyapunov exponents of cocycles over non-uniformly hyperbolic systems.* Workshop in Dynamical Systems & Related Topics, Penn State University, 10/17.
- *Lyapunov exponents and invariant conformal structures, with applications to rigidity problems in geometry.* Joint mini-course. Dynamics Beyond Uniform Hyperbolicity Workshop. Provo, UT, 6/17.
- *Periodic approximation of Lyapunov exponents for Banach cocycles.* Ergodic Theory Workshop, UNC at Chapel Hill, 4/17.
- *Cohomology, fiber bunching, and Lyapunov exponents of operator-valued cocycles.* Workshop on Dynamical Systems & Related Topics, University of Maryland, 4/17.

Seminar and colloquium talks

- *Rigidity for toral automorphisms.* Dynamical Systems Seminar, Penn State University, 12/9/24.
- *Local rigidity for hyperbolic toral automorphisms.* Student-directed Colloquium, Penn State University, 3/23.
- *Diffeomorphism cocycles over partially hyperbolic systems.* Dynamical Systems Seminar (Zoom), University of Porto, Portugal, 6/21.
- *Invariant metrics and conformality for cocycles over hyperbolic systems.* Geometry Luncheon Seminar, Penn State University, 4/19.
- *Periodic approximation of Lyapunov exponents for cocycles over hyperbolic systems.* Ergodic Theory/Probability Seminar, Ohio State University, 3/19.
- *Periodic approximation of Lyapunov exponents for cocycles over hyperbolic systems.* CDSNS Colloquium, Georgia Institute of Technology, 2/19.
- A series of talks on *Cocycles over hyperbolic systems.* Dynamical Systems Working Seminar at Penn State, 1/19.
- *Boundedness and invariant metrics for diffeomorphism cocycles over hyperbolic systems.* Dynamical Systems Seminar, Penn State University, 10/18.
- *Cocycles over hyperbolic dynamical systems.* University of Nevada, Reno, Department of Mathematics and Statistics Colloquium, 2/18.
- *Cocycles over hyperbolic dynamical systems.* Penn State University, Department of Mathematics, 12/17.
- *Boundedness, compactness, and invariant norms for operator-valued cocycles.* Geometric Analysis Seminar, University of Chicago, 3/17.

Talks for undergraduate students

- *Dynamical systems: questions and examples.* Penn State Math Club, 9/23.
- *Fractals in complex dynamics.* Penn State Math Club, 10/22.
- *Fractals, dynamics, and dimension.* Student Colloquium, Penn State, 10/21.
- *Fractals.* Penn State Math Club, 10/19.
- *One-dimensional dynamical systems.* Penn State Math Club, 11/17.

Teaching Experience

Pennsylvania State University, 2012-present

- Math 141 *Calculus with Analytic Geometry II*, Fall 2012, Spring 2013
- Math 311W *Concepts of Discrete Mathematics*, Fall 2016, Fall 2018, Spring 2022
- Math 311M *Honors Concepts of Discrete Mathematics*, Fall 2017
- Math 312 *Concepts of Real Analysis*, Fall 2015, Spring 2016, Fall 2019, Fall 2023
- Math 312H *Honors Concepts of Real Analysis*, Spring 2025
- Math 403H *Honors Classical Analysis I*, Fall 2017, Fall 2018, Fall 2021
- Math 421 *Complex Analysis*, Fall 2015
- Math 429 *Introduction to Topology*, Spring 2021
- Math 436 *Linear Algebra*, Spring 2017, Fall 2022
- Math 497B *Introduction to Dynamical Systems* (part of MASS Program), Fall 2014
- Math 497D *MASS Seminar*, Fall 2013, Fall 2014
- Math 497E *MASS Colloquium*, Fall 2013, Fall 2014
- Math 497 *Introduction to Dynamical Systems* (topics course), Spring 2020, Spring 2024
- Math 502 *Complex Analysis*, Spring 2016, Spring 2018
- Math 503 *Functional Analysis*, Spring 2020
- Math 506 *Ergodic Theory*, Spring 2023
- Math 507 *Dynamical Systems I*, Fall 2020, Fall 2024

University of South Alabama, 2003-2012

- MA 110 *Finite Mathematics*, Fall 2003, Spring 2004
- MA 112 *Precalculus Algebra*, Spring 2006, Spring 2007
- MA 113 *Precalculus Trigonometry*, Fall 2006, Fall 2007
- MA 115 *Precalculus Algebra and Trigonometry*, Fall 2005
- MA 125 *Calculus I*, Fall 2008, Spring 2009
- MA 126 *Calculus II*, Fall 2003, Fall 2010, Spring 2011
- MA 227 *Calculus III*, Fall 2011, Spring 2012
- MA 237 *Linear Algebra I*, Fall 2004, Fall 2005
- MA 316 *Linear Algebra II*, Spring 2005, Spring 2006
- MA 320 *Foundations of Mathematics*, Spring 2011
- MA 334 *Advanced Calculus I*, Fall 2006
- MA 335 *Advanced Calculus II*, Spring 2007
- MA 413 *Algebra I*, Fall 2010
- MA 490/590 *Dynamical Systems* (topics course), Spring 2008
- MA 506 *Ergodic Theory*, Spring 2023
- MA 507 *Applicable Mathematics I*, Spring 2004
- MA 508 *Applicable Mathematics II*, Fall 2004
- MA 518 *Linear Algebra I*, Spring 2004
- MA 535 *Real Analysis I*, Fall 2007
- MA 536 *Real Analysis II*, Spring 2008

University of Michigan, 2000-2003

- Math 115 *Calculus I*, Fall 2000, Fall 2001
- Math 116 *Calculus II*, Winter 2001, Winter 2002, Fall 2002
- Math 425 *Introduction to Probability*, Winter 2001, Winter 2003
- Math 490 *Introduction to Topology*, Winter 2002
- Math 525 *Probability Theory*, Winter 2003

Pennsylvania State University, 1997-1999

- Math 140 *Calculus I*, Summer 1997
- Math 230 *Calculus and Vector Analysis*, Spring 1998
- Math 497A *Topics in Number Theory* (recitation sessions), Fall 1999
- Math 597B *Basic Graduate Sequences Seminar*, Fall 1998, Spring 1999

Professional service

- Served on the Dynamical Systems and Ergodic Theory panels at the National Science Foundation DMS Analysis Program.
- Reviewed applications to Simons Foundation Travel Support for Mathematicians program.
- Served as a referee for the following journals: Ergodic Theory and Dynamical Systems, Journal of Modern Dynamics, Discrete and Continuous Dynamical Systems, Nonlinearity, Dynamical Systems, Experimental Mathematics, Stochastics and Dynamics, Journal of Dynamical and Control Systems, Differential Geometry and its Applications.

Committees and other activities

The Pennsylvania State University, 2012 - present

- The Honors Director in the Math Department, 2013-15, 2018-19, 2023-present.
- An Honors Adviser, 2013 - present.
- The Faculty Adviser to the Penn State Math Club, 2021 - present.
- A member of the Policy Committee, 2022 - 2025.
- A member of the Space Committee, 2023 - present.
- A member of the Penn State WIM (Women in Mathematics) group, 2012 - present.
- An organizer of a two-day Math camp for high school girls, Summer 2024.
- Associate Head for Administration, 2023-24.
- A member of the Personnel Committee, 2023-24.
- The chair of the Research Support Committee, 2023-24.
- A member of the Qualifying Examinations Panel, 2016-2021.
- A member of the GTA Oversight Committee, 2017-18, 2018-19, 2019-20.
- A member of Ph. D. Comprehensive Examination Committees, 2018-2021, 2023.
- A member of Ph. D. Thesis Committees, 2021, 2022.
- A member of the Undergraduate Studies Committee, 2013-15, 2018-19.
- An organizer of Dynamical Systems seminars, 2018-19.
- An organizer of the Workshops in Dynamical Systems and Related Topics, 2017, 2018.
- The Interim Director of the MASS (Mathematics Advanced Study Semesters) Program at Penn State, 2013-15.

University of South Alabama, 2003-2012

Service on college-level committees

- Summer Professional Development Awards Committee, 2011-12.
- Sabbatical Committee, 2010-11.
- Academic Programs and Planning Committee, 2004-05, 2005-06.

Service on departmental committees

- Tenure and Promotion Committee, 2011-12.
- Curriculum Committee, 2005-08, 2011-12; Chair of the committee, 2006-07.
- Reappointment Committees, 2007-09, 2010-12.
- Student Affairs Committee, 2004-05, 2005-06, 2011-12.
- Placement Test Committee, 2010-11.
- Hiring Committee, 2006-07, 2007-08.

Other activities

- Organizer of the Annual Mathematics Contest for undergraduate students, 2004-09.
- Organizer of the *Math in Action* Student Seminar, 2006-07.
- Academic advisor for Mathematics and Math/Secondary Education majors.
- Master's Thesis Committee member for Engineering graduate students.