

# Anton Izosimov – Curriculum Vitae

---

Associate Professor  
Department of Mathematics  
University of Arizona

email: izosimov@arizona.edu

## EDUCATION

- Loughborough University, PhD in Mathematics, 2012  
Thesis title: Singularities of bi-Hamiltonian systems and the multidimensional rigid body  
Advisor: Alexey Bolsinov
- Moscow State University, Candidate of Sciences in Mathematics, 2011  
Thesis title: Focus-focus singularities of integrable Hamiltonian systems  
Advisors: Alexey Bolsinov, Andrej Oshemkov
- Moscow State University, MS with honors in Mathematics, 2008

## EMPLOYMENT

- University of Arizona, Associate Professor, 2024 - present
- University of Arizona, Assistant Professor, 2018 - 2024
- University of Toronto, Postdoctoral Fellow, 2014 - 2017
- National Research University Higher School of Economics, Docent, 2013 - 2014
- Moscow State University, Assistant Professor, 2012 - 2014

## VISITING POSITIONS

- Max Planck Institute for Mathematics, January - August 2025
- Max Planck Institute for Mathematics, June - December 2017
- Hausdorff Research Institute For Mathematics, January - April 2012

## TEACHING EXPERIENCE

- University of Arizona
  - Undergraduate: Calculus I and II, Formal Mathematical Reasoning and Writing, Introduction to Linear Algebra, ODEs and Stability Theory, Real Analysis, Theory of Complex Variables, Theory of Probability, Theory of Statistics
  - Graduate: Algebra, Complex Analysis, Geometry and Topology, Symplectic Geometry and Integrable Systems, Theory of Graphs and Networks
- University of Toronto: Calculus, Differential Equations, Groups and Symmetry, Linear Algebra, Real Analysis
- Higher School of Economics: Calculus, Linear Algebra
- Moscow State University: Geometry and Topology

## SELECTED AWARDS, GRANTS, AND SCHOLARSHIPS

- Simons Foundation Travel Support for Mathematicians, 2024 - 2029
- NSF Research Grant, 2020 - 2024
- F.V. Atkinson Teaching Award, University of Toronto, 2016
- Best Instructor Award, Higher School of Economics, 2014
- Dynasty Foundation Scholarship, Russia, 2013 - 2014
- Russian Foundation of Basic Research Grant, 2012 - 2013
- Overseas Research Scholarship, United Kingdom, 2008 - 2011
- Leonhard Euler Foundation Scholarship, Russia, 2008

## SERVICE

### To the profession and broader community:

- Grant reviewer/panelist for NSF and the Simons Foundation
- Referee for several book series and multiple journals, including *Inventiones*, *Duke*, etc.
- Advisory committee member, *Poisson* conference series
- Guest editor of the *Arnold Mathematical Journal* (special issue on finite dimensional integrable systems, in preparation)
- Co-organizer of the *Lie groups, geometry, integrability, hydrodynamics* conference, Nordfjordeid, Norway, 2024
- Co-organizer of the virtual Hamiltonian Systems Seminar, 2020 - present
- Co-organizer of the Tucson Math Circle, 2023 - 2024

### To the University of Arizona:

- Committee membership: Graduate (2020 - 2022), Postdoctoral (2020 and 2022 - 2024), Personnel (2024 - 2025)
- Coordinator of the Undergraduate Research Assistantship Program, 2020 - 2021
- Co-chair of the Mathematics Colloquium, 2018 - 2019

### To the University of Toronto:

- Organizer of the Symplectic Geometry Seminar, 2015 - 2016

## GRADUATE STUDENTS

### Current:

- Quinton Aboud, University of Arizona, PhD

### Past:

- Abigayle Dirdak, University of Arizona, PhD, 2024
- Ilia Kirillov, University of Toronto, PhD, 2024 (co-advised with B. Khesin)
- Leah Hand, University of Arizona, PhD, 2024
- Quinton Aboud, University of Arizona, MS, 2021
- Abigayle Dirdak, University of Arizona, MS, 2021
- Ilia Kirillov, Moscow State University, MS, 2019
- Daniel Fusca, University of Toronto, PhD, 2018 (co-advised with B. Khesin)
- Konstantin Aleshkin, Moscow State University, MS, 2015

## POSTDOCS

- Darlayne Addabbo, University of Arizona, 2020 - 2024 (now a TTAP at SUNY Poly)
- Melinda Lanius, University of Arizona, 2018 - 2021 (now a TTAP at Auburn)

## INVITED CONFERENCE TALKS AND LECTURE SERIES

### Conferences:

- Cluster Algebras and Mathematical Physics in the Lakes, University of Cumbria, 2025
- Statistical Mechanics and Discrete Geometry, IPAM, Los Angeles, 2024
- Infinite Dimensional Geometry and PDEs, Banff, 2023
- Math in the Mine: a workshop on shape spaces, Minière de Vallauria, France, 2023
- Finite Dimensional Integrability in Mathematical Physics, Les Diablerets, 2023
- JMM, Special Session on Integrable Systems and Symplectic Group Actions, Boston, 2023
- FDIS 2022: Finite Dimensional Integrable Systems, Tel Aviv University, 2022
- AMS Fall Eastern Sectional Meeting, Session on Geometric Dynamics, Online, 2020
- FDIS 2019: Finite Dimensional Integrable Systems, Shanghai Jiao Tong University, 2019
- Cluster Algebra and Mathematical Physics, Michigan State University, 2018

- Geometric Aspects of Momentum Maps and Integrability, CSF Ascona, 2018
- Gone Fishing 2018: a meeting on Poisson geometry, UC San Diego, 2018
- Analytic and Algebraic Methods in Differential Equations, Moscow, 2017
- Painleve Equations and Discrete Dynamics, Banff, 2016
- Integrable Systems, CSF Ascona, Switzerland, 2016
- Integrability and Near-Integrability in Mechanics and Geometry, BIRS-Oaxaca, 2016
- Analysis of PDEs of Fluid Mechanics, Rice University, 2016
- Integrability in Mechanics and Geometry, ICERM, 2015
- Beyond Toric Integrability, EPFL, 2013

#### Lecture series:

- Infinite-dimensional Geometry and Integrable PDEs, *Infinite-dimensional Geometry: Theory and Applications* Thematic Program, Erwin Schrödinger Institute, 2025
- Poisson Geometry and Hydrodynamics, *Poisson* Summer School, Fields Institute, 2018

#### PAPERS

##### Preprints:

1. Folding of quadrilaterals, zigzags, and Arnold-Liouville integrability  
*Arnold Mathematical Journal*, to appear
2. Pentagon maps over rings, Grassmannians, and skewers, with L. Hand, arXiv:2405.06122
3. Planar networks and simple Lie groups beyond type A  
*Advances in Mathematics*, to appear

##### Papers:

1. Coadjoint orbits of area-preserving diffeomorphisms of non-orientable surfaces, with B. Khesin and I. Kirillov  
*Journal of Symplectic Geometry*, vol. 23, no. 1, pp. 1-35, 2025
2. Integrable systems and cluster algebras, with M. Gekhtman  
*Encyclopedia of Mathematical Physics 2nd edition*, 2024
3. Geometry of generalized fluid flows, with B. Khesin  
*Calculus of Variations and Partial Differential Equations*, vol. 63, no. 3, 2024
4. Change of polytope volumes under Möbius transformations and the circumcenter of mass  
*Discrete & Computational Geometry*, vol. 72, pp. 1369-1376, 2024
5. Long-diagonal pentagram maps, with B. Khesin  
*Bulletin of the London Mathematical Society*, vol. 55, no. 3, pp. 1314-1329, 2023
6. Polygon recutting as a cluster integrable system  
*Selecta Mathematica*, vol. 29, no. 21, 2023
7. Jordan-Kronecker invariants of Lie algebra representations and degrees of invariant polynomials, with A. Bolsinov and I. Kozlov  
*Transformation Groups*, vol. 28, pp. 541-560, 2023
8. What is a lattice W-algebra, with G. Marí Beffa  
*International Mathematics Research Notices*, no. 19, pp. 17021-17059, 2023
9. Dimers, networks, and cluster integrable systems  
*Geometric and Functional Analysis*, vol. 32, pp. 861-880, 2022
10. The pentagram map, Poncelet polygons, and commuting difference operators  
*Compositio Mathematica*, vol. 158, no. 5, pp. 1084-1124, 2022
11. Pentagon maps and refactorization in Poisson-Lie groups  
*Advances in Mathematics*, vol. 404, p. 108476, 2022
12. Intersecting the sides of a polygon  
*Proceedings of the American Mathematical Society*, vol. 150, pp. 639-649, 2022
13. The limit point of the pentagram map and infinitesimal monodromy, with Q. Aboud  
*International Mathematics Research Notices*, no. 7, pp. 5383-5397, 2022

14. Smooth invariants of focus-focus singularities and obstructions to product decomposition, with A. Bolsinov  
*Journal of Symplectic Geometry*, vol. 17, no. 6, pp. 1613-1648, 2019
15. Vortex sheets and diffeomorphism groupoids, with B. Khesin  
*Advances in Mathematics*, vol. 338, pp. 447-501, 2018
16. Characterization of steady solutions to the 2D Euler equation, with B. Khesin  
*International Mathematics Research Notices*, no. 24, pp. 7459-7503, 2017
17. Singularities of integrable systems and algebraic curves  
*International Mathematics Research Notices*, no. 18, pp. 5475-5524, 2017
18. Classification of Casimirs in 2D hydrodynamics, with B. Khesin  
*Moscow Mathematical Journal*, vol. 17, pp. 699-716, 2017
19. Finite-dimensional integrable systems: a collection of research problems, with A. Bolsinov and D. Tsonev  
*Journal of Geometry and Physics*, vol. 115, pp. 2-15, 2017
20. Euler equations on the general linear group, cubic curves, and inscribed hexagons, with K. Aleshkin  
*L'Enseignement Mathématique*, vol. 62, pp. 143-170, 2016
21. Coadjoint orbits of symplectic diffeomorphisms of surfaces and ideal hydrodynamics, with B. Khesin and M. Mousavi  
*Annales de l'Institut Fourier*, vol. 66, no. 6, pp. 2385-2433, 2016
22. Pentagrams, inscribed polygons, and Prym varieties  
*Electronic Research Announcements in Mathematical Sciences*, vol. 23, pp. 25-40, 2016
23. Flat bi-Hamiltonian structures and invariant densities  
*Letters in Mathematical Physics*, vol. 106, pp. 1415-1427, 2016
24. Leapfrog map and Toda lattice, appendix to Integrable cluster dynamics of directed networks and pentagram maps by M. Gekhtman, M. Shapiro, S. Tabachnikov, and A. Vainshtein  
*Advances in Mathematics*, vol. 300, pp. 390-450, 2016
25. Algebraic geometry and stability for integrable systems  
*Physica D*, vol. 291, pp. 74-82, 2015
26. Singularities of bi-Hamiltonian systems, with A. Bolsinov  
*Communications in Mathematical Physics*, vol. 331, pp. 507-543, 2014
27. Stability of relative equilibria of multidimensional rigid body  
*Nonlinearity*, vol. 27, pp. 1419-1444, 2014
28. The derived algebra of a stabilizer, families of coadjoint orbits, and sheets  
*Journal of Lie Theory*, vol. 24, pp. 705-714, 2014
29. Curvature of Poisson pencils in dimension three  
*Differential Geometry and its Applications*, vol. 31, pp. 557-567, 2013
30. Stability of stationary rotations of multidimensional rigid body  
*Moscow University Mathematics Bulletin*, vol. 68, pp. 80-82, 2013
31. Stability in bihamiltonian systems and multidimensional rigid body  
*Journal of Geometry and Physics*, vol. 62, pp. 2414-2423, 2012
32. A note on relative equilibria of a free multidimensional rigid body  
*Journal of Physics A: Mathematical and Theoretical*, vol. 45, p. 325203, 2012
33. Algebra and topology of integrable systems: problems for investigation, with A. Bolsinov, A. Konyaev, and A. Oshemkov  
*Tr. Sem. Vektor Tenzor Anal.*, vol. 28, pp. 119-191, 2012 (in Russian)
34. Classification of almost toric singularities of Lagrangian foliations  
*Sbornik: Mathematics*, vol. 202, pp. 1021-1042, 2011
35. Smooth invariants of focus-focus singularities  
*Moscow University Mathematics Bulletin*, vol. 66, pp. 178-180, 2011