Oleg Lazarev

Contact Information

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Research Interests

Symplectic and contact topology, h-principles, mirror symmetry and algebraic geometry, stable homotopy theory and ∞-categories, dynamical systems

Employment

Assistant Professor, University of Massachusetts, Boston, Mathematics Department	2021- present
Simons Postdoctoral Fellow, Harvard University, Mathematics Department	2020-2021
NSF Postdoctoral Fellow, Columbia University, Mathematics Department	2017-2020

Education

Stanford University 2012-2017

Ph.D. in Mathematics, September 2017

- Dissertation title: Flexible Weinstein domains and applications to symplectic and contact topology
- Advisor: Yakov Eliashberg

Independent University of Moscow Spring 2010

Math in Moscow

Princeton University 2008-2012

A.B. in Mathematics, Summa cum Laude

- Undergraduate thesis: A complex variable extension of the Hobby-Rice theorem
- Advisor: Elliott Lieb

Fellowships and Awards

NSF Standard Grant, DMS-2305392	2023-2027
NSF Postdoctoral Research Fellowship, DMS-1705128	2017-2020
NSF Graduate Research Fellowship, DGE-114747	2012-2017
Middleton Miller '29 Prize, Princeton Mathematics Department, for independent work in mathematics	2012
Sigma Xi Book Award for Outstanding Research, Princeton Mathematics Department	2012
AMS Math in Moscow Scholarship	2009

Publications and Preprints

Kai Cieliebak, Oleg Lazarev, Thomas Massoni, Agustin Moreno. Floer theory of Anosov flows in dimension three. arXiv:2211.07453. p. 1- 60.

Oleg Lazarev, Zach Sylvan, and Hiro Lee Tanaka. The ∞-category of stabilized Liouville sectors. arXiv:2110.11754. p. 1- 135.

Oleg Lazarev, Zach Sylvan, and Hiro Lee Tanaka. Localization and flexibilization in symplectic geometry. *Geometry and Topology*, Vol 30-5, 1829-1898 (2026). arXiv:2109.06069.

Andrew Hanlon, Jeff Hicks, Oleg Lazarev. Relating categorical dimensions in topology and symplectic geometry. *Transactions of the AMS.* 379, 5941-5082 (2026). arxiv:2308.13677.

Ipsita Datta, Oleg Lazarev, Chindu Mohanakumar, Angela Wu. Weinstein presentations for high-dimensional antisurgery. *Algebraic and Geometric Topology*, Vol 25, 3707-3736 (2025) arXiv: 2310.03133.

Andrew Hanlon, Jeff Hicks, Oleg Lazarev. Resolutions of toric subvarieties by line bundles and applications. *Forum of Mathematics Pi.* Vol 12, 1-58 (2024). arxiv:2303.03763.

Oleg Lazarev and Zach Sylvan. Prime-localized Weinstein subdomains. *Geometry and Topology.* 27(2), 699-737 (2023). arXiv:2009.09490.

Oleg Lazarev. Symplectic flexibility and the Grothendieck group of the Fukaya category. *Journal of Topology.* Vol 15-1, 204-237 (2022). arXiv: 1910.01101.

Oleg Lazarev. Maximal contact and symplectic structures. *Journal of Topology.* 13(3), 1058-1083 (2020). arXiv:1810.11728.

Oleg Lazarev. H-principles for regular Lagrangians. *Journal of Symplectic Geometry*, 18(4), 1071- 1090 (2020). arXiv:1808.05993.

Oleg Lazarev. Simplifying Weinstein Morse functions. *Geometry and Topology.* 24, 2603 - 2646 (2020). arXiv:1808.03676.

Oleg Lazarev. Contact manifolds with flexible fillings. 2016. *Geometric and Functional Analysis.* 30, 188 - 254 (2020). arXiv:1610.04837.

Yakov Eliashberg, Sheel Ganatra, and Oleg Lazarev. Flexible Lagrangians. *International Mathematics Research Notices*, 2020(8), 2408 - 2435 (2020). arXiv:1510.01287.

Oleg Lazarev, Matt Mizuhara, Ben Reid, and Holly Swisher. An Extension of a Proof of the Ramanujan Congruences for Multipartitions. *Ramanujan Journal*, 45(1), 1–20, (2018). arXiv:1601.05287.

Levent Alpoge, Nadine Amersi, Geoffrey Iyer, Oleg Lazarev, Steven J. Miller, and Liyang Zhang. Maass waveforms and low-lying zeros. *Analytic number theory*, 19–55. Springer, Cham, (2015).

Geoffrey Iyer, Oleg Lazarev, Steven J. Miller, and Liyang Zhang. Finding and counting MSTD sets. *Combinatorial and additive number theory—CANT 2011 and 2012*, volume 101 of *Springer Proc. Math. Stat.*, 79–98. Springer, New York, (2014).

Oleg Lazarev, Steven J. Miller, and Kevin O'Bryant. Distribution of missing sums in sumsets. *Experimental Mathematics*, 22(2), 132–156, (2013).

Oleg Lazarev and Elliott H. Lieb. A smooth, complex generalization of the Hobby-Rice theorem. *Indiana University Mathematics Journal*, 62(4):1133–1141 (2013).

Geoffrey Iyer, Oleg Lazarev, Steven J. Miller, and Liyang Zhang.

Generalized more sums than differences sets. *Journal of Number Theory*, 132(5), 1054–1073, (2012).

Oleg Lazarev and Holly Swisher. A combinatorial proof of a recursive formula for multipartitions. *Integers*, 12(1), 113–127, (2012).

Invited talks

AMS Spring Sectional Meeting "Sheaf-theoretic and Floer-theoretic approaches to contact and symplectic topology", Boston College	March 2026
Stony Brook symplectic geometry seminar	Oct. 2025
AIM workshop on "Homological mirror symmetry and multi-graded commutative algebra"	August 2025
Montreal symplectic geometry seminar	April 2025
Boston University Geometry and Physics seminar	Feb 2025
Stanford symplectic seminar	Nov 2024
Virtual syzygies and mirror symmetry seminar	Oct 2024
Brandeis Topology Seminar (2 talks)	Sept 2024
Summer school on h-principles, Instituto de ciencias Mathematicas Madrid (2 talks)	June 2024
MIT Symplectic Geometry Seminar	May 2024
AIM workshop on "Higher-dimensional contact topology"	April 2024
Washington University Topology Seminar (2 talks)	March 2024
Dartmouth Topology Seminar	Feb 2024
Northeastern University Topology Seminar	Oct 2023
Stanford Symplectic Geometry seminar	June 2023
Louisiana State University Geometry/Topology seminar	May 2023
The Haitian Scientific Society seminar (Boston)	April 2023
University of Montreal symplectic seminar	Dec. 2022
Fall Eastern AMS Sectional Meeting	Oct. 2022
Symplectic 'N' Contact Topology, Early-Career Conference, mentor	August 2022
Emmanuel Giroux birthday conference, Institut Henri Poincaré	July 2022
Boston University/Keio University/Tsinghua University workshop on Geometry and Mathematical Physics	June 2022

University of Maryland Geometry seminar	April 2022
Lagrangian Floer Theory Simons Center Workshop	March 2022
Northern California Symplectic Geometry Seminar	March 2022
Stony Brook Low-Dimensional Topology, Gauge Theory, and Symplectic Geometry Seminar	February 2022
IAS/Princeton Symplectic seminar	Dec. 2021
UMass Boston Colloquium	Nov. 2021
IAS workshop, "The h-principle and beyond"	Nov. 2021
Symplectic semester conference at Institut Henri Poincaré	July 2021, Cancelled due to Covid-19
Boston University Geometry and Physics seminar (online)	April 2021
Dutch Differential Topology and Geometry seminar, 2 talks (online)	April 2021
Symplectic Zoominar, CRM-Montréal, Princeton/IAS, Tel Aviv, and Paris (online)	March 2021
Western Hemisphere Symplectic Geometry seminar (online)	May 2020
Stony Brook University Symplectic Geometry seminar	May 2020 Cancelled due to Covid-19
IAS Emerging Topics workshop on Hypersurfaces in Contact Geometry	March 2020 Cancelled due to Covid-19
University of Massachusetts, Boston, Colloquium	March 2020
University of South California, Colloquium	Feb. 2020
MIT Geometry and Topology seminar	Dec. 2019
Conference on homological algebra, microlocal analysis and symplectic geometry, CRM Montreal	June 2019
IAS/Princeton Symplectic Geometry Seminar	April 2019
Northwestern Geometry and Physics Seminar	Feb. 2019
PATCH Seminar Philadelphia area seminar: Bryn Mawr, Haverford, Penn, Temple	Feb. 2019
Georgia Tech Geometry Topology Seminar	Dec. 2018
Workshop on Legendrian submanifolds UQAM Montreal	Nov. 2018
Stony Brook topology and symplectic geometry seminar	Oct. 2018

Conference on geometric methods in symplectic and contact topology	Aug. 2018
Workshop on symplectic geometry and its interactions with low-dimensional topology, Princeton	June 2018
Gokova Geometry Topology Conference	May 2018
Nantes symplectic seminar	Jan. 2018
Berlin-Hamburg symplectic seminar	Jan. 2018
Berkeley Topology Seminar	Nov. 2017
MIT Geometry and Topology Seminar	May 2017
Joint Los Angeles Topology Seminar	April 2017
Columbia Symplectic Geometry, Gauge Theory, and Categorification Seminar	Dec. 2016
IAS/Princeton Symplectic Geometry Seminar	Dec. 2016
Stanford Symplectic Geometry Seminar	Nov. 2016
Northern California Symplectic Geometry Seminar Joint between Berkeley and Stanford	Dec. 2015
Combinatorial and Additive Number Theory Conference CUNY	May 2012
Joint Mathematics Meetings Boston	Jan. 2012
Maine/Quebec Number Theory Conference University of Maine	Nov. 2011
Young Mathematicians Conference Ohio State University	Aug. 2011
Shenandoah Undergraduate Mathematics and Statistics Conference James Madison University	Sept. 2010

Teaching

Calculus 1 (Math 140), two sections, Instructor, UMass Boston	Fall 2026
Linear algebra (Math 260), Instructor, UMass Boston	Spring 2026
Calculus 2 (Math 141), Instructor, UMass Boston	Fall 2025
General topology (Math 440), Instructor, UMass Boston	Spring 2025
General topology (Math 440), Instructor, UMass Boston	Spring 2024
Calculus 2 (Math 141), two sections, Instructor, UMass Boston	Fall 2023
General topology (Math 440), Instructor, UMass Boston	Spring 2023
Complex Analysis with applications (Math 358), Instructor, UMass Boston	Fall 2022
Calculus 2 (Math 141), Instructor, UMass Boston	Fall 2022
Calculus 2 (Math 141), Instructor, UMass Boston	Spring 2022
Calculus 1 (Math 140), Instructor, UMass Boston	Fall 2021
Undergraduate algebraic topology (Math 4053), Instructor, Columbia	Spring 2020
Differential Equations (Math 2030), Instructor, Columbia	Fall 2018
Honors Differential Equations (Math 53H), Teaching Assistant, Stanford	Spring 2016
Introductory Calculus (Math 19), Course Assistant, Stanford	Fall 2015
Differential Equations (Math 53), Teaching Assistant, Stanford	Spring 2014
Graduate Complex Analysis (Math 215A), Course Assistant, Stanford	Fall 2013
Honors Linear Algebra (Math 217), Course Assistant, Princeton	Spring 2011

Service and outreach

Mentoring:

Independent study mentor for Kabir Shotland Advised reading on algebraic topology	Fall 2026
PhD committee member for Xiaoying He (Brandeis University)	May 2026
Mentor for six-week summer research program for three UMass Boston undergrads. Advised research on robotic arm configurations	June-July 2025
Independent study mentor for Thomas Tran Advised reading on applied topology	Nov 2023- May 2024
Senior thesis advisor for Jack Pierce Thesis title: "Constrained motion spaces of robotic arms"	June 2022- May 2023
Academic advisor for roughly ten UMass Boston math major undergrads per year. Advised course selection and academic requirements	Fall 2022- present
Symplectic and contact geometry early-career workshop (SYNC) mentor Mentor for group of grad students and postdocs, which led to joint paper "Weinstein presentations for high-dimensional anti-surgery"	Aug 2022
Stanford Math Directed Reading Program mentor Guided Stanford undergrad through Milnor's "Morse theory" during the spring quarter	Spring 2017
Stanford Undergraduate Research in Mathematics, co-advisor Co-advised three Stanford undergrads for ten week research on "Mapping class groups and four-dimensional Lefschetz fibrations"	Summer 2016
First year graduate student mentor	2014-2015
Summer Institute for Mathematics, University of Washington, counselor Math camp for high-school students	Summer 2009

Outreach and community service:

Career panel organizer at UMass Boston Invited alumni, professors, grad students, industry representatives to discuss various careers in mathematics several times a year	2023- present
UMass Boston "Welcome Day" math department representative Gave biannual presentations about the math major to in-coming students and parents	2022-present
Judge for CSM Poster showcase Judge for research posters submitted by UMB undergrads	April 2026
PROMYS Pathways volunteer Discussed math puzzles with high school students at local community centers in Boston	Spring 2025
Judge for Tri-County Science Fair Judge for mathematics submissions by high school and college teams	April 2025, 2026
Judge for SIMIODE, differential equations modelling competition for high school and college students	Nov. 2022, Nov 2023, Nov 2024
UMass Boston undergraduate math club Worked on math problems and riddles with students gave interview about life in mathematics	Sept. 2021

Seminar and workshop organizing:

UMass Boston math department colloquium, co-organizer	Fall 2022-
Harvard/MIT outdoor symplectic seminar, co-organizer	Spring 2021
Kylerec workshop co-organizer Five day graduate student workshop on symplectic fillings	Spring 2017
Columbia Symplectic Geometry, Gauge Theory, and Categorification Seminar, co-organizer	2017- 2020
Stanford Student Symplectic Seminar, organizer	2015-2016
Stanford Kiddie Seminar for first year graduate students, co-organizer	2013-2014

Reviewing and professional service

Referee for *Geometry and Topology, Journal of Topology, Inventiones mathematicae, Journal of Symplectic Geometry, Compositio Mathematica, International Mathematics Research Notices, Communications in Analysis and Geometry, Advances in Mathematics, Mathematische Annalen, Selecta, Acta Mathematica.* Refereed 32 articles since 2021.

University and department service:

Recruitment committee, UMass Boston Department of Mathematics	2022- present
Personnel committee, UMass Boston Department of Mathematics	2023-2025, 2026-present
JFK Prize committee in CSM	March 2026
Lower-division courses committee, UMass Boston Department of Mathematics	2025-2026
Curriculum committee, UMass Boston Department of Mathematics	2024-2026
Math Grad Program committee, UMB Math Department	May 2024
College of Sciences and Mathematics faculty senator, UMass Boston	2021- 2025