

Kenneth Blakey
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Curriculum Vitae

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Employment

May 2020 – Aug 2020 Online storefront, Buy Sell Play: TCG Card Store

May 2019 – Aug 2019 Barista, Starbucks

Jun 2017 – Jul 2017 Delivery driver, I ♥ NY Pizza

Education

2023 – 2027 ¹ Ph.D mathematics, Massachusetts Institute of Technology
Advisor: Paul Seidel

2019 – 2023 Sc.B. mathematics with honors, Brown University
Honors advisor: Thomas Goodwillie

2015 – 2019 High school diploma, Pine Ridge High school
Distinguished scholar award, hall of fame recipient, merit scholar designation, summa cum laude, valedictorian

Visits

Mar 2026 – Mar 2026 MPIM Bonn

Jun 2025 – Jun 2025 Nonlinear group at MPI MiS Leipzig

Jan 2024 – Mar 2024 Nonlinear group at MPI MiS Leipzig

Research interests

Symplectic geometry, Floer theory, Gromov-Witten theory, stable homotopy theory

Publications

1. *Floer homotopy theory and degenerate Lagrangian intersections*
arXiv:2410.11478, to appear in *Journal of Symplectic Geometry*

¹Expected

Preprints

1. *Spectral Viterbo isomorphism: complex-oriented versus framed*
arXiv:2608.20289, submitted
2. *Quantum de Sitter and analytically-continued Chern-Simons theory*
arXiv:2608.07467, with S. Alexander, submitted
3. *A homotopy coherent Pontryagin-Thom isomorphism*
arXiv:2607.01482, with L. Keenan, submitted
4. *Bulk-deformations, Floer complex bordism, and Grothendieck-Riemann-Roch*
arXiv:2605.06620, submitted
5. *Ample divisor complements, Floer spectra, and relative Gromov-Witten theory*
arXiv:2601.08506, submitted
6. *Parameterized Lagrangian Floer homotopy*
arXiv:2506.20122, with C.M. Bonciocat, submitted
7. *Augmentation varieties and disk potentials III*
arXiv:2401.13024, with S. Chanda, Y. Sun, C.T. Woodward
8. *Augmentation varieties and disk potentials II*
arXiv:2401.13021, with S. Chanda, Y. Sun, C.T. Woodward
9. *Augmentation varieties and disk potentials I*
arXiv:2310.17821, with S. Chanda, Y. Sun, C.T. Woodward, submitted
10. *Stable Morse flow trees*
arXiv:2207.00653

Fellowships, grants, and scholarships

- 2027 Oberwolfach research fellows (OWRF) "Derived orbifold cobordism" (2723p)
(with M. Calle and L. Keenan)
- 2026 Banff international research station (BIRS) research in teams, "Floer homotopy theory and mirror symmetry" (26rit051) (with J. Asplund, Y. Deshmukh, N. Porcelli)
- 2023 National science foundation graduate research fellowship program (NSF-GRFP)
- 2023 Stanford EDGE fellowship (awarded, declined)
- 2023 Stanford Knights Hennessy fellowship (awarded, declined)
- 2022 Barry Goldwater scholarship
- 2019 Brown University presidential scholars program
- 2019 The Gates Scholarship

Awards, distinctions, and honors

- 2023 Brown University David Howell premium for excellence in mathematics and natural philosophy
- 2023 CAARMS Angela E. Grant poster presentation award for “best theory”
- 2019 Daytona Beach News Journal medallion of excellence

Invited colloquium talks

- 2025 UMass Boston colloquium

Invited conference talks

- 2026 AMS sectional meeting “Sheaf-theoretic and Floer-theoretic approaches to contact and symplectic topology” @ Boston College
- 2026 Lagrangian Floer theory and applications @ Harvard CMSA
- 2025 Homotopy theory and Floer homology @ Institut Mittag-Leffler
- 2024 AMS New England graduate student conference @ Brown University
- 2022 AMS New England graduate student conference @ Brown University

Invited seminar talks

- 2027 University of Montreal symplectic seminar
- 2026 Bonn symplectic geometry seminar
- 2026 Brown University geometry/topology seminar
- 2026 Stanford symplectic seminar
- 2026 USC topology seminar
- 2025 Brandeis topology seminar
- 2025 Gdańsk University of Technology nonlinear analysis seminar
- 2025 Humboldt-Universität zu Berlin symplektische geometrie seminar
- 2025 Princeton/IAS symplectic seminar
- 2025 Ruhr-Universität Bochum oberseminar dynamical systems
- 2025 Rutgers symplectic geometry seminar
- 2025 Stanford symplectic seminar
- 2025 Stony Brook symplectic geometry, gauge theory and low-dimensional topology seminar
- 2025 UCLA topology seminar
- 2024 MPI MiS Leipzig geometry seminar
- 2024 Symplectic zoominar

- 2023 Brown University geometry/topology seminar
- 2023 MIT symplectic seminar
- 2022 Brown University mathematics graduate student seminar

Miscellaneous talks/presentations

- 2026 Kylerec 2026: intro to Lagrangian Floer theory, I
- 2026 Kylerec 2026: intro to Lagrangian Floer theory, II
- 2026 MIT PuMaGraSS: ∞ -categorification of Grothendieck-Riemann-Roch
- 2026 MIT PuMaGraSS: overview of Floer homotopy theory
- 2026 Rutgers symplectic summer school: an overview of Floer homotopy
- 2025 Harvard zygotop seminar: relating Floer homotopy and string topology
- 2025 MIT reading seminar: Gromov-Witten invariants from symplectic geometry
- 2025 MIT reading seminar: symplectic (co)homology and closed-string Rabinowitz Floer homology
- 2025 UMass Boston: undergraduate math club presentation
- 2024 MIT Kan seminar: basics of topological K-theory
- 2024 MIT Kan seminar: Bott periodicity and Fredholm operators
- 2024 MIT Kan seminar: introduction to Floer homotopy theory
- 2024 UCLA online learning seminar: operations from glued pairs of discs
- 2023 CAARMS poster session
- 2023 Brown University MATH 2720O lecture: the triangulation conjecture and Floer homotopy theory
- 2023 Brown University mathematics undergraduate colloquium
- 2022 Brown University MATH 2720U lecture: Hamiltonian Floer homology
- 2021 DIMACS REU end of program presentation
- 2019 Brown University mathematics DRP end of program presentation

Advising

Undergraduate students

- 2026 Owl Chia and Papon Lapate; MIT mathematics DRP
Various flavors of bordism
- 2025 Amir Kolic; MIT mathematics DRP
Characteristic classes and K -theory
- 2024 Ariff Johan; MIT-Imperial summer research exchange
Moduli spaces of gradient flows in discrete Morse theory

High school students

2025 Haotian He, Blake Li, and Benjamin Taycher; PRIMES reading group
Basics of algebraic topology

Teaching

Massachusetts Institute of Technology

2026 18.03: Differential equations, recitation section

Brown University

2023 MATH 1140: Functions of several variables, undergraduate TA

2022 MATH 1140: Functions of several variables, undergraduate TA

2022 MATH 1410: Topology, undergraduate TA

2021 MATH 1410: Topology, undergraduate TA

Programs participated

2026 AMS sectional meeting “Sheaf-theoretic and Floer-theoretic approaches to contact and symplectic topology”

2026 Contact geometry, general relativity, and thermodynamics

2026 Homological mirror symmetry

2026 Floer theory beyond Floer

2026 Interactions between quantum and homotopical geometry

2026 Lagrangian Floer theory and applications

2026 Rutgers symplectic summer school

2026 The wavefunction of the universe: reloaded

2025 Developments in the mathematical sciences

2025 Homotopy theory and Floer homology

2025 Moduli spaces and pseudo-holomorphic curves: analysis and categorical differential topology

2025 Rutgers symplectic summer school

2025 Symplectic topology from the K-theoretic viewpoint

2024 2nd Simons mathematics summer workshop: Moduli

2024 Kylerec: Recent developments in Gromov–Witten theory

2024 Positive geometry in particle physics and cosmology

2024 Rutgers symplectic summer school

2024 Symplectic geometry of representation and quiver varieties

2024 UCLA online learning seminar: Calabi-Yau structure on wrapped Fukaya categories

2021 DIMACS REU

2019 Brown University mathematics DRP

Programs organized

- 2026 Kylerec: Link spectral invariants and Weyl laws, with Gabriel Beiner, Clair Xinle Dai, Yonghwan Kim, Galen Liang, Lina Liu
Served as “lead organizer”
- 2025 Kylerec: Wrapped Fukaya categories and symplectic cohomology, with Clair Xinle Dai, Galen Liang, Eric Kilgore, Eha Srivastava
- 2024 Floer homotopy reading seminar

Departmental service

Massachusetts Institute of Technology

- 2025 – 2026 DRP mentor
- 2025 Graduate student panel for prospective students
- 2024 – 2025 Program for research in mathematics, engineering and science for high school students (PRIMES) mentor
- 2024 – 2026 Grad-undergrad mathematics mentoring initiative (GUMMI) mentor
- 2023 – 2025 Undergraduate mathematics association coffee chats

Brown University

- 2022 Mathematics TA orientation panelist

Service to the profession

Referee service: Transactions of the American Mathematical Society

Service to the community

- 2027 Kylerec: Global Kuranishi charts and Floer homotopy theory – mentor
- 2026 Brown University presidential scholars program – graduate student alumni panel
- 2025 Brown University presidential scholars program – graduate student alumni panel
- 2025 Brown University presidential scholars program – new student welcome video
- 2024 Brown University black alumni outreach
- 2024 Jack Kent Cooke young scholars program webinar – interview and Q&A
- 2023 The Gates Scholarship summer institute squad leader
- 2021 Sprout and STEM mathematics tutor
- 2021 Sprout and STEM mentor
- 2018 Tomorrow’s leaders, FUTURES foundation for Volusia county schools