Jeremy Hahn

CONTACT INFORMATION

Department of Mathematics
Massachusetts Institute of Techonology
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Cambridge, MA 02142

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EDUCATION

Harvard University, Cambridge, MA

Ph.D. in Mathematics, May 2018
Advisor: Michael J. Hopkins

Massachusetts Institute of Technology, Cambridge, MA

B.S. in Mathematics, January 2013

EMPLOYMENT

Massachusetts Institute of Technology, Cambridge, MA

Assistant Professor, July 2021-
NSF Postdoc and CLE Moore Instructor, August 2018-July 2021

PUBLISHED AND ACCEPTED WORKS

On the boundaries of highly connected, almost closed manifolds with Robert Burklund and Andrew Senger.
To appear in **Acta Mathematica**.

Redshift and multiplication for truncated Brown–Peterson spectra with Dylan Wilson.
To appear in **Annals of Mathematics**.

Odd primary analogs of Real orientations with Andrew Senger and Dylan Wilson.
To appear in **Geometry and Topology**.

Real topological Hochschild homology and the Segal conjecture with Dylan Wilson.
Advances in Mathematics. Volume 387, 2021, 107839.

Eilenberg–MacLane spectra as equivariant Thom spectra with Dylan Wilson.
Geometry and Topology. Volume 24, issue 6 (2020), pages 2709-2748.

Exotic multiplications on periodic complex bordism with Allen Yuan.
Journal of Topology. Volume 13, 2020, pages 1839-1852.

Real Orientations of Lubin–Tate Spectra with Xiaolin Danny Shi.
Inventiones Mathematicae. Volume 221, 2020, pages 731-776.

Multiplicative structure in the stable splitting of $\Omega SU(n)$ with Allen Yuan.
Advances in Mathematics. Volume 348, 2019, pages 412-455.

Appendix to *Brown Peterson cohomology from Morava E-theory* by Tobias Barthel and Nathaniel Stapleton.
Compositio Mathematica. Volume 153, 2017, pages 780-819.

ARXIV PREPRINTS

A motivic filtration on the topological cyclic homology of commutative ring spectra with Arpon Raksit and Dylan Wilson.

Inertia groups in the metastable range with Robert Burklund and Andrew Senger.

Galois reconstruction of Artin–Tate R-motivic spectra with Robert Burklund and Andrew Senger.

Appendix to *Equivariant nonabelian Poincaré duality and equivariant factorization homology of Thom spectra* by Asaf Horev, Inbar Klang, and Foling Zou, with Dylan Wilson.

Wilson Spaces, Snaith Constructions, and Elliptic Orientations with Hood Chatham and Allen Yuan.

The Lubin–Tate Theory of Configuration Spaces: I with Lukas Brantner and Ben Knudsen.

Nilpotence in normed MGL-modules with Tom Bachmann.

Quotients of even rings with Dylan Wilson.

Nilpotence in E_n-algebras.

On the Bousfield classes of H_∞-ring spectra.

Honors and Awards

2022–2025	Rockwell International Career Development Professorship
2018–2021	NSF Postdoctoral Fellowship
2013–2018	NSF Graduate Research Fellowship
2013–2018	James Mills Peirce Fellowship
2016	Certificate of Distinction as TF for Math 21*b*.
2008	Putnam Competition Honorable Mention

Advising

Current PhD student David Jongwon Lee

UROP (Undergraduate Research Opportunities Program) supervisor for MIT undergraduates Vanshika Jain, Preston Cranford, Keita Allen, Xzavier Herbert.

Service

Reports or quick opinions for Advances in Mathematics, Annals of Mathematics, Compositio Mathematica, Geometry and Topology, Homotopy Homology & Applications, Journal of the AMS, Mathematische Zeitschrift, Proceedings of the London Mathematical Society, Transactions of the AMS

Academic advisor for MIT math majors

Organizer of the MIT Graduate Student Lunch Seminar (2021, 2022)

Head organizer of the MIT Topology Seminar (2021, 2022)

Organizer of MIT's IAP Lecture Series (2022)

Reviewer of PhD theses for The Hebrew University of Jerusalem and the Massachusetts Institute of Technology

Project assistant to Hopkins at the Arizona Winter School: Topology and Arithmetic (2019)

Invited Talks

The mod (p, v_1) motivic filtration on the topological cyclic homology of topology K-

theory, Conference on Homotopy Theory with Applications to Arithmetic and Geometry, Fields Institute. (July 2022)

The even filtration, Northwestern Topology seminar. (April 2022)

Manifolds with few homology groups, Amherst Topology seminar. (October 2021)

Obstruction theory for structured ring spectra, Viva Talbot retrospective. (June 2021)

Manifolds with at most three homology groups, Cornell Topology festival. (May 2021)

Manifolds in the metastable range, Princeton Topology seminar. (April 2021)

Connections between the Segal and Lichtenbaum–Quillen conjectures, Midwest Topology seminar. (April 2021)

Pure ring spectra with finitely presented cohomology, Chicagoland Topology seminar. (April 2021)

Redshift for truncated Brown–Peterson spectra, Michigan Topology seminar. (February 2021)

Redshift for truncated Brown–Peterson spectra, Notre Dame Topology seminar. (February 2021)

Redshift in algebraic K*-theory*, UIUC Topology seminar. (February 2021)

The metastable homotopy of $\mathrm{MO}\langle 4n\rangle$, Universiteit Utrecht synthetic seminar. (January 2021)

Examples of chromatic redshift, U. Haifa Topology & Geometry seminar. (January 2021)

More highly connected manifolds, Bonn Topology seminar. (December 2020)

Redshift for truncated Brown–Peterson spectra, MIT Topology seminar. (December 2020)

Manifolds in the metastable range, University of Toronto Topology Seminar. (November 2020)

Higher algebra as a tool for smoothing manifolds, Melbourne Topology Seminar. (November 2020)

Inertia groups in the metastable range, Cornell Topology and Geometric Group Theory Seminar. (October 2020)

Nishida Nilpotence, Online Algebraic Topology Seminar (OATS). (September 2020)

Higher algebra in the classification of highly connected manifolds, Berkeley Mathematics Department Colloquium. (September 2020)

A classification of highly connected manifolds, Oberwolfach Workshop 2031. (July 2020)

Odd primary analogues of Real Orientations, Equivariant Stable Homotopy and p-adic Hodge Theory workshop, Banff International Research Station. (March 2020)

Series of three lectures on highly connected manifolds, Presented to the research group of Oscar Randal-Williams, University of Cambridge. (February 2020)

Highly connected manifolds in dimensions larger than 248, University of Cambridge Differential Geometry and Topology Seminar. (February 2020)

Using the Adams spectral sequence to make smooth structures on manifolds, University of Copenhagen Algebra/Topology Seminar. (February 2020)

Using the Adams Spectral Sequence to make smooth structures on manifolds, Wayne State Topology Seminar. (January 2020)

Highly connected manifolds in dimensions larger than 248, MIT Topology Seminar. (September 2019)

Even spaces and Snaith constructions, Notre Dame Topology Seminar. (April 2019)

Even spaces and Snaith constructions, University at Albany SUNY Algebra/Topology Seminar. (February 2019)

The spectrum of units of a height 2 *theory*, University of Minnesota Topology Seminar. (November 2018)

Even spaces old and new, University of Kentucky Topology Seminar. (November 2018)

The spectrum of units of a height 2 *theory*, Derived algebraic geometry and chromatic homotopy workshop, Newton Institute, Cambridge, England. (September 2018)

The spectrum of units of a height 2 *theory*, MIT Topology Seminar. (September 2018)

Eilenberg-MacLane Spectra as equivariant Thom spectra, Equivariant homotopy theory and K-theory workshop, Freie Universität, Berlin, Germany. (June 2018)

Dyer-Lashof operations in the Morava E-theory of n-fold loop spaces, International Workshop on Algebraic Topology, Southern University of Science and Technology, Shenzhen, China. (June 2018)

Toward the C_p-fixed points of Morava E-theory, Chromatic Homotopy Theory Journey to the Frontier, Colorado University Boulder (May 2018)

Even spaces and variants of periodic complex bordism, Purdue Topology Seminar. (February 2018)

Milnor Operations in Equivariant Homotopy Theory, University of Virginia Topology Seminar. (February 2018)

Milnor Operations in Equivariant Homotopy Theory, Johns Hopkins Topology Seminar. (February 2018)

Structure in the Stable Splitting of Affine Grassmannians, Northwestern University Topology Seminar. (November 2017)

Multiplicative structures in the Stable Splitting of Affine Grassmannians, University of Chicago Topology Seminar. (November 2017)

Teaching Experience

MIT 18.02 Fall 2022. Multivariable Calculus.

MIT 18.900 Spring 2022. Geometry and Topology in the Plane.

MIT 18.905 Fall 2021. Algebraic Topology I.

MIT 18.06 Spring 2021. Linear Algebra. Course Administrator (course taught by Andrei Negut).

MIT 18.905 Fall 2020. Algebraic Topology I.

MIT 18.917 Spring 2020. Topics in Algebraic Topology.

MIT 18.06 Fall 2019. Linear Algebra. Teaching Assistant (course taught by Andrei Negut).

Harvard Math 21b Spring 2018. Linear Algebra. Teaching Fellow.

Harvard Math 21b Spring 2016. Linear Algebra. Teaching Fellow.

MIT 18.905 Fall 2011. Algebraic Topology I. Teaching Assistant (course taught by Gonçalo Tabuada).

Conferences and Workshops Attended

Conference on Homotopy Theory with Applications to Arithmetic and Geometry, Fields Institute. (June 2022)

Equivariant techniques in stable homotopy theory, AIM workshop. (May 2021)

Equivariant Stable Homotopy and p-adic Hodge Theory workshop, Banff International Research Station. (March 2020)

Mayday 2019, University of Chicago. (October 2019)

Arbeitsgemeinschaften: Elliptic Cohomology according to Lurie, Oberwolfach, Germany. (April 2019)

MSRI Workshop: Derived algebraic geometry and its applications, Berkeley. (March 2019)

Arizona Winter School 2019: Topology and Arithmetic, University of Arizona Tucson. (March 2019)

Derived algebraic geometry and chromatic homotopy, Newton Institute, Cambridge, England. (September 2018)

Equivariant homotopy theory and K-theory workshop, Freie Universität, Berlin, Germany. (June 2018)

International Workshop on Algebraic Topology, Southern University of Science and Technology, Shenzhen, China. (June 2018)

Chromatic Homotopy Theory Journey to the Frontier, Colorado University Boulder (May 2018)

Homotopy theory: tools and applications, University of Illinois at Urbana-Champaign (July 2017)

Conference on invertible objects and duality in derived algebraic geometry and homotopy theory, University of Regensburg, Germany (April 2017)

USC K-theory Summer School, University of Southern California (August 2015)

Hausdorff Trimester Program: Homotopy theory, manifolds, and field theories, Bonn, Germany (May 2015)

Talbot 2014: Motivic Homotopy Theory, Pigeon Forge, Tennessee (March 2014)

Talbot 2013: Chromatic Homotopy Theory, South Lake Tahoe, California (April 2013)

Quillen Memorial Conference, MIT (October 2012)

Contributed Talks

Quadratic–Symmetric Duality, Thursday Seminar, Harvard University. (December 2021)

The multiplication on truncated Brown–Peterson spectra, Thursday Seminar, Harvard University. (April 2021)

Open problems in chromatic homotopy theory, Juvitop Seminar, Massachusetts Institute of Technology. (April 2020)

Framings and the recognition principle, Thursday Seminar, Harvard University. (November 2019)

The Construction of BO/I_n, Thursday Seminar, Harvard University. (Fall 2018)

More Deformations of p-Divisible Groups, Juvitop Seminar, Massachusetts Institute of Technology. (April 2018)

Schlessinger's Criterion and Deformation Theory, Juvitop Seminar, Massachusetts Institute of Technology. (March 2018)

The work of Arone and Mahowald, Thursday Seminar, Harvard University. (February 2018)

Chromatic Types of Structured Ring Spectra, Homotopy Theory: tools and applications, University of Illinois at Urbana-Champaign. (July 2017)

The Brauer Group of Morava E-theory, Juvitop Seminar, Massachusetts Institute of Technology. (May 2017)

Rezk's Logarithm, Juvitop Seminar, Massachusetts Institute of Technology. (November 2016)

Nilpotence and the Nishida Relations, Juvitop Seminar, Massachusetts Institute of Technology. (October 2016)

The Slice Filtration, Juvitop Seminar, Massachusetts Institute of Technology. (Feb 2016)

An Intro to p-adic Homotopy Theory, Juvitop Seminar, Massachusetts Institute of Technology. (April 2015)

Wilson Spaces as Atomic Even Spaces, Thursday Seminar, Harvard University. (March 2015)

A Reduction to the Reduction Theorem, Juvitop Seminar, Massachusetts Institute of Technology. (December 2014)

From n-fold Segal Spaces to n-fold Quasi-categories, Thursday Seminar, Harvard University. (March 2013)