

EMPLOYMENT

Clay Mathematics Institute: Clay Research Fellow
at University of Copenhagen, 2024-2025
at Institute for Advanced Studies, 2025-

EDUCATION

Massachusetts Institute of Technology, 2019-2024, Ph.D
Princeton University, Princeton NJ – Class of 2019, B.A, GPA 3.98
Taylor Allderdice High School, Pittsburgh PA – Class of 2015, GPA 4.0

PAPERS AND PREPRINTS

The stable homology of Hurwitz modules and applications (w Aaron Landesman), Preprint, (2025)
The spectral Sullivan conjecture, Preprint, (2025)
Picard groups of generalized Moore spectra (w Guchuan Li and Ningchuan Zhang), Preprint, (2025)
c-structures and trace methods beyond connective rings (w Vladimir Sosnilo), Preprint, (2025)
Homological stability for Hurwitz spaces and applications (w Aaron Landesman), Preprint, (2025)
The Cohen--Lenstra moments over function fields via the stable homology of non-splitting Hurwitz spaces (w Aaron Landesman), Preprint, (2024)
An alternate computation of the stable homology of dihedral group Hurwitz spaces (w Aaron Landesman), Preprint, (2024)
Crystallinity for reduced syntomic cohomology and the mod $(p, v_{p^{n-2}})$ K-theory of \mathbb{Z}/p^n (w Jeremy Hahn and Andy Senger), Preprint, (2024)
K-theoretic counterexamples to Ravenel's telescope conjecture (w Robert Burklund, Jeremy Hahn, and Tomer Schlank), Preprint, (2023)
Topological Hochschild homology of the image of j (w David Jongwon Lee), Preprint, (2023)
Categorifying reduced rings, Quantum Topology, (2024)
The algebraic K theory of the $K(1)$ -local sphere via TC, Preprint, (2022)
Adams-type maps are not stable under composition (w Robert Burklund and Piotr Pstragowski), Proceedings of the AMS, (2022)
On the K-theory of regular coconnective rings (w Robert Burklund), Selecta Mathematica, (2023)
Some aspects of noncommutative geometry (w Robert Burklund), Available on [website](https://ishanina.github.io) (2021)

The Borel cohomology of free iterated loop spaces (w Justin Wu), Accepted at AGT, (2025)

Eilenberg Mac Lane spectra as p -cyclonic Thom spectra, Journal of Topology, (2021)

CONFERENCE TALKS/COLLOQUIA/LECTURE SERIES

Union College Math Conference: June 4 2022

The K-theoretic telescope conjecture away from p

AIM Workshop on Equivariant techniques in Stable Homotopy Theory: October 28 2022

The Balmer spectrum of 2-complete cellular C-motives

Panorama of homotopy theory: A conference in Honour of Mike Hopkins: June 6 2023

Applications of algebraic K-theory to a problem in topology

Arbeitstagung 2023 on Condensed Mathematics: June 21 2023

K-theory and the telescope conjecture

The transatlantic transchromatic homotopy theory conference II - Andy Baker 70: July 31 2023

Some consequences of the failure of the telescope conjecture

Oberwolfach Homotopy theory: August 7 2023

K-theory and the telescope conjecture

Midwest Topology seminar: Oct 1 2023

The K-theory of the chromatic filtration

Princeton Special Algebraic Topology seminar on the telescope conjecture: Oct 28 2023

An overview of the proof

NMSU Colloquium: May 3 2024

Stable homotopy groups of spheres, telescopes, and algebraic K-theory

Oberwolfach Topologie: July 26 2024

Stable homology of Hurwitz spaces and Cohen--Lenstra moments

Young Topologists Meeting: August 5-9 2024

Telescopic computations in algebraic K-theory (Lecture series)

Yatsugatake Workshop 2024: September 12 2024

The telescope conjecture

Kochi Autumn Workshop 2024: September 21 2024

K theory and the telescope conjecture

Oberwolfach Arbeitsgemeinschaft: Algebraic K-Theory and the Telescope Conjecture: October 18 2024

Future directions I

Simons Laufer Institute Hot Topics Workshop: Life after the Telescope Conjecture: December 12 2024

Asymptotic Constancy II

Columbia Colloquium: March 12 2025

Homotopy groups of spheres and algebraic K-theory

AIM Workshop on Moments in families of L-functions over function fields: April 30 2025

Homological stability for Hurwitz spaces

Cornell Topology Festival: May 3 2025

The telescope conjecture and algebraic K-theory

INI Beyond the telescope conjecture: June 16 2025

Some future directions

Abel Symposium, Recent Advances in Stable homotopy Theory: June 27 2025

Trace methods beyond connective rings

Oberwolfach K-theory: August 12 2025

Trace methods beyond connective rings

SEMINAR TALKS

Columbia Topology Seminar: April 22 2022

The K-theoretic telescope conjecture away from p

Johns Hopkins Topology Seminar: August 29 2022

The algebraic K theory of type 2 spectra

Northwestern Topology seminar: October 10 2022

The algebraic K theory of type 2 spectra

Chicago Topology seminar: October 11 2022

The algebraic K theory of type 2 spectra

Albany Algebra/Topology seminar: November 3 2022

What we know about stable subcategories of the stable homotopy category

UCSD Topology seminar: November 22 2022

The algebraic K theory of type 2 spectra

IAS seminar: March 17 2023

The algebraic K theory of type 2 spectra

Hamburg Quantum Topology and Categorification seminar: April 5 2023

Categorifying reduced rings

Copenhagen Algebra/Topology seminar: July 7 2023

K-theory and the telescope conjecture

Münster Topology seminar: July 25 2023

K-theory and the telescope conjecture

UVA Topology seminar: Sept 21 2023

Telescopic stable homotopy theory

UIUC Topology seminar: Oct 3 2023

Telescopic stable homotopy theory

IU Bloomington Topology seminar: Oct 25 2023

Telescopic stable homotopy theory

UW Topology seminar: Nov 9 2023

Telescopic stable homotopy theory

IAS seminar: Nov 30 2023

Telescopic stable homotopy theory

Ohio State Homotopy theory seminar: Dec 7 2023

Telescopic stable homotopy theory

Chicago Topology seminar: Jan 16 2024

Telescopic stable homotopy theory

NMSU Topology seminar: May 3 2024

Telescopic stable homotopy theory

University of Tokyo Number Theory Seminar: September 18 2024

Telescopic stable homotopy theory

Stockholm University Topology Seminar: October 1 2024

Telescopic stable homotopy theory

KTH Algebraic & Geometry Seminar: October 2 2024

The Cohen--Lenstra moments for functions fields and stable homology of Hurwitz spaces

Copenhagen Algebra & Topology Seminar: November 4 2024

Crystallinity for reduced syntomic cohomology and $K(\mathbb{Z}/p^n)/(\mathfrak{p}, v_1)$

Electronic Computational Homotopy Theory seminar: November 7 2024

The stable homology of Hurwitz spaces and Cohen--Lenstra moments for functions fields

Topology Intercity Seminar Utrecht-Nijmegen: November 21 2024

The stable homology of Hurwitz spaces and Cohen--Lenstra moments for functions fields

Columbia University Special Seminar: December 4 2024

The stable homology of Hurwitz spaces and Cohen--Lenstra moments for functions fields

University of Bonn Topology Seminar: January 21 2025

Telescopic stable homotopy theory

MPIM Topology Seminar: January 20 2025

The stable homology of Hurwitz spaces and Cohen--Lenstra moments for functions fields

Isaac Newton Institute Equivariant Homotopy Theory Seminar: February 4 2025

Homological stability for Hurwitz spaces and applications

Columbia Informal Mathematical Physics Seminar: March 3 2025

The telescopic approach to stable homotopy theory

IAS/Princeton Arithmetic Geometry Seminar: March 10 2025

Malle's conjecture for function fields

IHES Mathematics Seminar: April 10 2025

Homological stability for Hurwitz spaces and applications

Penn Topology Seminar: April 24 2025

Homological stability for Hurwitz spaces and applications

MIT Topology Seminar: May 12 2025

The spectral Sullivan conjecture

Harvard/MIT Algebraic Geometry Seminar: May 13 2025

Hurwitz spaces and the asymptotic Picard rank conjecture

Columbia Topology Seminar: Oct 3 2025

Trace methods beyond connective rings

EXPOSITORY TALKS

Introduction - European Talbot: Summer 2025

Pro-étale cohomology of rigid-analytic spaces II - Babytop: Spring 2024

Arc descent for perfect schemes II - The two towers seminar: Spring 2024

Arc descent for perfect schemes I - The two towers seminar: Spring 2024

Bootstrapping to cyclotomic spectra - Thursday Seminar: Spring 2024

The THH of the cochains of the circle - Thursday Seminar: Spring 2024
Chromatically localized algebraic K-theory - Thursday Seminar: Spring 2024
The basics of THH - Gm-THH and ski: Winter 2024
Hecke operators and buildings - Babytop: Fall 2023
Higher heights and the triple loop space approach - Babytop: Spring 2023
bo-resolutions - Babytop: Spring 2023
The height 1 telescope conjecture via the localized Adams spectral sequence - Babytop: Spring 2023
Overview of $T(n)$ -local stable homotopy theory - Babytop: Spring 2023
The moduli stack of broken lines - Juvitop: Spring 2023
Absolute prismatic cohomology - Thursday Seminar: Fall 2022
Nilpotence detecting Lubin-Tate theories at heights 0,1 - Juvitop: Fall 2022
The Goodwillie tower of the identity and Tits buildings - Juvitop: Spring 2022
Tools of unstable homotopy theory - Thursday Seminar: Spring 2022
The L theory of \mathbb{Z} - Thursday Seminar: Fall 2021
The proof of $T(n)$ -local ambidexterity - Talbot: Fall 2021
Computing with synthetic spectra - Babytop: Fall 2021
Deformation theory and Lie algebras - Juvitop: Fall 2021
Chromatic homotopy and telescopic localization - Thursday Seminar: Spring 2021
The infinitesimal site and algebraic de Rham cohomology - STAGE Seminar: Spring 2021
Periodic localizations, Ravenel - IAP Kan Seminar: IAP 2021
Outline of the proof of the cobordism hypothesis - Juvitop: Fall 2020
Lazard's ring and height - Juvitop: Spring 2020
Kan seminar: Fall 2019

1. Rational homotopy theory - Griffiths and Morgan
2. Higher algebraic K theory I - Quillen
3. Bott periodicity - Atiyah
4. K theory - Atiyah
5. On the construction FK - Milnor

SEMINARS (CO)ORGANIZED

MIT Topology seminar: Spring 2021, Summer 2021, Fall 2021, Fall 2023
Juvitop: Fall 2022, The Chromatic Nullstellensatz

Juvitop: Spring 2023, Floer Homotopy Theory

Babytop: Spring 2023, $T(n)$ -local stable homotopy theory

Babytop: Fall 2023, Topological automorphic forms

Babytop: Spring 2024, The $K(n)$ -local sphere and the Two (p-adic) Towers

Copenhagen Algebra/Topology seminar: Fall 2024, Spring 2025

Joint Arithmetic Geometry Seminar (Princeton/IAS): Fall 2025

CONFERENCES/WORKSHOPS (CO)ORGANIZED

Oberwolfach Arbeitsgemeinschaft: Algebraic K-Theory and the Telescope Conjecture

AWARDS

Awarded NSF Postdoctoral Research Fellowship (Declined), 2024

Awarded Landis fellowship in MIT math department, 2019

Awarded Highest Honor (Summa Cum Laude) in Princeton Mathematics Department, 2019

George B. Covington Award for Excellence in Mathematics, 2019

Awarded NSF Graduate Research Fellowship, 2019

Inducted in the fall for Phi Beta Kappa Honor Society, 2018

Recipient of Andrew H. Brown Prize for outstanding juniors at Princeton in mathematics, 2018

Recipient of Shapiro Prize for Academic Excellence at Princeton, 2017

SERVICE AND TEACHING

Mentor for European Talbot on Higher Algebra and Chromatic Homotopy Theory, 2025

Volunteer for Culture night for the center for Geometry and Topology, 2024

Mentor for UChicago REU project, 2023

Mentor for UROP, reading project with undergraduate student, 2023

Mentor for coffee chats, advising program for undergraduate students, 2022-2023

GUMMI mentor, advising program for undergraduate students, 2020-2024

Mentor for MIT's directed reading program for undergraduate students, 2019-2024

Lecture series at Copenhagen (4 lectures): Arithmetic statistics for homotopy theorists, 2025

Taught 18.032 Differential Equations at MIT, 2023

Taught 18.06 Linear Algebra at MIT, 2022

PRIMES mentor, research program for high school students, 2020-2021

Volunteer for Mathreach, program for underprivileged students to get excited about math, 2018-2019

Scribe for AIM workshop "Equivariant techniques in stable homotopy theory" 2022

Counselor at PROMYS, math camp for high school students, 2016-2019

Undergraduate Course Assistant for Honors Analysis I & II, 2016-2017

Referee for IMRN (x3), Trans. AMS, Compositio, JEMS, AJM

Quick Opinion for AGT