Curriculum Vitae: Natalie Stewart

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Education

Harvard University, Cambridge MA
Ph.D. in Mathematics. Expected spring 2026.

Massachusetts Institute of Technology, Cambridge MA
B.S. in Mathematics with Computer Science, May 2021.

Papers

1. *On tensor products with equivariant commutative operads* (2025).
2. *Equivariant operads, symmetric sequences, and Boardman-Vogt tensor products* (2025).
3. *Orbital categories and weak indexing systems* (2024). Submitted.
4. *Lower vounds of hyperbolic 3-manifolds via decomposition* (2021). Joint with Colin Adams et. al. Submitted.
5. *Generalized Augmented Cellular Alternating Links in Thickened Surfaces are Hyperbolic* (2021). Joint with Colin Adams et. al. In *Eur. J. Math.*

External talks

Equivariant operads, Wirthmüller isomorphisms, and a conjecture of Blumberg-Hill (May 2025). For the algebraic topology seminar at Columbia university.

Homotopy-coherent interchange and equivariant little disk operads (April 2025). Contributed talk at the INI "Operads and calculus" conference at Queen's Univfersity, Belfast.

Internal talks

Homological stability for general linear groups over infinite fields (May 2025). Given for Talbot.

The unreasonable effectiveness of Nilpotence in stable homotopy theory (March 2025). Given for MIT Babytop seminar.

Homotopy-coherent interchange and equivariant little disk operads (Feb 2025). Given for Harvard Zygotop seminar.

Equivariant operads, Wirthmüller isomorphisms, and a conjecture of Blumberg-Hill (Feb 2025). Given for Harvard Zygotop seminar.

Indexed operations, HHR norms, and a splash of equivariant higher algebra (Nov 2024). Given for MIT Babytop seminar.

You can construct G-commutative algebras one norm at a time (February 2024). Given for Harvard Zygtoyop seminar.

Internal talks

Mackey functors and the tom Dieck splitting (February 2024). Given for Harvard Zygotop seminar.

A modular description for the $K(2)$-local sphere (October 2023). Given for MIT babytop seminar

Borromean rings, chainmaille, and genuine equivariant homotopy theory (September 2023). Given for Harvard trivial notions seminar.

The Adams spectral sequence for ko theory of the sphere (April 2023). Given for Harvard Zygotop seminar.

On chromatic cyclotomic extensions (March 2023). Given for MIT babytop seminar.

Crash course on stable homotopy theory (February 2023). Given for MIT Juvitop seminar.

Nilpotence detection and the chromatic nullstellensatz (October 2022). Given for MIT Juvitop seminar. Given for Harvard Zygtoyop seminar.

Constructions of ∞-operads and the BV tensor product (April 2022). Given for Harvard ∞-categories seminar.

Operadic Koszul duality and the spectral Lie operad (March 2022). Given for MIT Juvitop seminar.

The Joyal model structure on simplicial sets, straightening, and unstraightening (February 2022). Given for Harvard ∞-categories seminar.

From $\mathbb{Q}$ to $\mathbb{R}$: bicategorical adjunctions, profunctors, and absolute colimits (February 2022). Given for the Trivial Notions seminar.

Operads and Iterated Loop Spaces (November 2021). Given for the MIT Kan seminar.

Adapted homology theories and the Adams spectral sequence (November 2021). Given for the MIT babytop seminar.

On Milnor's exotic 7-spheres (October 2021). Given for the MIT Kan seminar.

Lie algebra cohomology and L_∞-algebras (September 2021). Given for the MIT Juvitop seminar.

Estimating link volumes via subdivision (July 2020), given remotely and jointly with 6 other undergraduates.

Selected awards

James Mills Peirce Fellowship, Harvard University	2021
NSF GFRP Fellowship	2021
Phi Beta Kappa nomination,	2021
Sigma Xi nomination,	2021

MISC.

Undergrad research supervisor for spring 2025.

Organizer of the MIT Babytop seminar for fall 2024.

Founding organizer of the Harvard Zygotop seminar for the year 2023.

Co-organizer of the Harvard $(\infty, 1)$-learning seminar for spring 2022.

Mentor in the Harvard directed reading program (DRP) for fall 2021, spring 2022, and spring 2024.

Mentor in the MIT Undergrad Society of Women in Math (USWIM) mentorship program during fall 2020 and spring 2021.