Grant Barkley — Curriculum Vitae

CONTACT INFORMATION	Science Center 333e Department of Mathematics Harvard University Cambridge, MA 02138 USA	gbarkley@math.harvard.edu

EDUCATION

Harvard University

Ph.D. student in Mathematics, advised by Lauren Williams (expected 2026)
M.A. in Mathematics (March 2022)

North Carolina State University

B.S. in Mathematics and Physics, minor in Computer Science (May 2020)
- Honors program in Mathematics, University Scholars program
- GPA: 4.0
- College of Sciences 2019 Student Excellence Award Co-winner
- College of Sciences 2020 Outstanding Scholar

PUBLICATIONS

"Affine extended weak order is a lattice" (with D. Speyer), in preparation.

"Biclosed sets in affine root systems" (with D. Speyer), in preparation.

"Channels, Billiards, and Perfect Matching 2-Divisibility" (with R. Liu), *Electronic Journal of Combinatorics*, Volume 28, Issue 2, 2021. Available at `arXiv:1911.08102`.

CONFERENCE AND INVITED TALKS

Extended weak order in affine type at the international conference on Formal Power Series and Algebraic Combinatorics in Bangalore, India, July 2022.

The lattice of biclosed sets in affine type at the Michigan Combinatorics seminar, January 2022.

Extended weak order in affine type at the Harvard–MIT–Microsoft Combinatorics seminar, November 2021.

Billiards, Channels, and Perfect Matching 2-Divisibility at the international conference on Formal Power Series and Algebraic Combinatorics online, July 2020.

Coxeter groups and the lattice of total orders at the Triangle Area Graduate Mathematics Conference in Chapel Hill, NC, November 2019.

Perfect matchings, Channels, and 2-Divisibility at the Southeastern International Conference on Combinatorics, Graph Theory & Computing in Boca Raton, FL, March 2019.

Domino Tilings and Divisibility at the ACC Meeting of the Minds in Louisville, KY, March 2019.

OTHER TALKS

Tilting and Auslander-Reiten translation at the Harvard Cluster Categories learning seminar, June 2022.

Disintegration and assembly of ∞-operads at the Harvard Infinity Categories seminar, April 2022.

Kac–Moody groups and Bott periodicity at the Harvard Trivial Notions seminar, March 2022.

Straightening and unstraightening at the Harvard Infinity Categories seminar, February 2022.

Equivariant homology of the affine Grassmannian at the Harvard Universal Centralizers seminar, October 2021.

Abelian varieties with complex multiplication at Juvitop, March 2021.

The geometric Satake correspondence at the Harvard Geometric Langlands seminar, February 2021.

Cotangent stacks and twisted D-modules at the Harvard Geometric Langlands seminar, January 2021.

The Calculus of Constructions at the Harvard Trivial Notions seminar, October 2020.

Undergraduate Mathematics at NC State at the NC State College of Sciences Donor Recognition Dinner, January 2020.

Coxeter groups and the lattice of total orders at the NC State SUM Series, December 2019.

Undergraduate Mathematics at NC State at the NC State Math Department 130th Anniversary, October 2019.

Coxeter groups and the lattice of total orders at the UMich REU seminar, July 2019.

Spectral Sequences and the Universal Coefficient Theorem at the NC State Geometry and Topology learning seminar, February 2019.

Domino Tilings and Divisibility at the NC State SUM Series, December 2018.

Modular Functions at the NC State Math Insight Talks, October 2018.

TEACHING EXPERIENCE	2022	Guest Lecturer, Intro to Combinatorics
	2022	Teaching Fellow, Math M
	2021	Designer and Instructor, Quantum Mechanics for the Math-Minded
	2021	Course Assistant, Lie Groups and Lie Algebras
	2019-2020	Recitation Leader, Problem Solving for Competitions (Volunteer)
	2017-2018	Teaching Assistant, Foundations of Advanced Mathematics
	2017-2018	Mathematics and Physics Tutor, University Tutorial Center

HONORS AND AWARDS	2020	Outstanding Scholar Award, NC State College of Sciences
	2020	Outstanding Community Outreach Award, NC State Department of Mathematics
	2020	Wesley O. Doggett Award for Scholarship, NC State Department of Physics
	2019	Student Excellence Award, NC State College of Sciences
	2019	Best Student Paper Award, Southeastern International Conference on Combinatorics, Graph Theory, and Computing
	2017	Meritorious Winner, Mathematical Contest in Modeling
	2016	National Merit Scholar
	2016	Eagle Scout
OUTREACH	2021-	Harvard Math Includes small group leader
	2019	Initiated and ran NC State's first Julia Robinson Mathematics Festival
	2018-2020	Coach for the Centennial Middle School Math Team
	2017-2020	Game-runner at Washington STEM Elementary Math & Science Night
MENTORSHIP	2022	Eric Du, Marvin Li, and Peter Luo: Enumerative combinatorics
	2022	Guarav Goel and Eric Shen: Young tableaux
	2020-2021	Ray Shang: Lie algebras, commutative algebra, representation theory
	2021	Lara Zeng and Nadine Meister: Quantum mechanics and functional analysis
	2021	Shane Kissinger: Harmonic analysis and C*-algebras
LEADERSHIP	2021-2022	Department representative for Harvard Graduate Student Council
	2021-2022	Organizer of the Harvard Trivial Notions seminar
	2019-2020	President of the NC State Society for Undergraduate Mathematics
	2018-2019	Secretary of the NC State Society for Undergraduate Mathematics
	2018-2020	Ambassador for the NC State College of Sciences
	2018-2020	Organizer for various math competitions at NC State
	2018-2019	Director of Finance for the Honors Quad Area Council