Connor Simpson

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Affiliation

Institute for Advanced Study (IAS) *2024–2025*
Member

University of Wisconsin – Madison *2018–2024*
PhD Mathematics (advisor: Botong Wang)

Cornell University *2014–2018*
BA Mathematics

Research

Matroids, algebraic geometry, combinatorics, commutative algebra.
Papers numbered chronologically by arXiv date.

7. "Total positivity for matroid Schubert varieties". By Xuhua He, Connor Simpson, and Kaitao Xie. *Submitted* (2023). arXiv: 2310.18925.
6. "A new generic vanishing theorem on homogeneous varieties and the positivity conjecture for triple intersections of Schubert cells". By Jörg Schürmann, Connor Simpson, and Botong Wang. *Compos. Math.* (to appear). arXiv: 2303.13833.
5. "The Bergman fan of a polymatroid". By Colin Crowley, June Huh, Matt Larson, Connor Simpson, and Botong Wang. *Submitted* (2022). arXiv: 2207.08764.
4. "Simplicial generation of Chow rings of matroids". By Spencer Backman, Christopher Eur, and Connor Simpson. *J. Eur. Math. Soc. (JEMS)* (2023). Published online first. arXiv: 1905.07114.
3. "Chow rings of vector space matroids". By Thomas Hameister, Sujit Rao, and Connor Simpson. *J. Comb.* 12.1 (2021). arXiv: 1802.04241.
2. "Flow polytopes of partitions". By Karola Mészáros, Connor Simpson, and Zoe Wellner. *Electron. J. Combin.* 26.1 (2019). arXiv: 1707.03100.
1. "The set splittability problem". By Peter Bernstein, Cashous Bortner, Sam Coskey, Shuni Li, and Connor Simpson. *Australas. J. Combin.* 75.2 (2019), pp. 190–209. arXiv: 1611.01542.

In preparation

8. "Polymatroid Schubert varieties". By Colin Crowley, Connor Simpson, and Botong Wang. *In preparation* (2024).

Awards

2022 **NSF Grant DMS-2206872 ($20,000)**
To hold GradMoCCA, a meeting on combinatorial commutative algebra.

Foreign Language and Area Studies Fellowship
Funded by US Dept of Education. Used to study Mandarin at Middlebury Language School

2021 **Henry Schaerf Mathematics Graduate award**
"given to a graduate student who has demonstrated promise in their academic work"

Outstanding TA award
"given to TAs who have demonstrated excellence in teaching over multiple semesters"

2018 **NSF Graduate Research Fellowship Program, Honorable Mention**
Cornell University, *summa cum laude* honors

Selected talks

2024 Suzhou workshop on matroid theory
Stockholm masterclass on jump loci & Hodge theory

2023 Nankai University Center for Combinatorics

2022 Fields Institute matroids seminar
AMS Fall Central Sectional
CA+ ("Commutative Algebra Plus")

2020 Geometric combinatorics mini-symposium at SIAM DM20 (cancelled due to COVID)
Cornell combinatorics seminar (cancelled due to COVID)

2019 Matroids Day

Software

"Complex Paint" *2014–2016*
A program for exploring fractals. Still used to teach Ithaca High School's "Fractals & Chaos" class, though I handed off maintenance duties in 2016.

Service

Directed reading program (DRP) coorganizer *2020–2021*
DRP provides mentors for undergraduates reading about math topics of their choice.

Directed reading program mentor *Fall 2019, 2020*
Mentored undergraduates reading about combinatorics and Coxeter groups.

Madison Math Circle coorganizer *2019–2021*

Organizing

Matroids Day 2022 *November 2022*
Conference on matroids and related areas at UW Madison.

GradMoCCA *May 2022*
Brought together over 60 early career researchers in combinatorial commutative algebra.

Sage at Wisconsin *November 2019*
Mini-workshop to teach people to use Sage and Python for math research.

Teaching

All teaching is as a TA.

Math 340 (Linear algebra)	*Fall 2022, Spring 2024*
Math 222 (Calculus II)	*Spring 2022*
Math 114 (Precalculus)	*Fall 2021*
Tutorial program	*Spring 2021*
Math 211 (Business calculus)	*Fall 2019, 2020*
Math 234 (Calculus III)	*Spring 2019*

Math 221 (Calculus) *Fall 2018*

LANGUAGES English (native), Mandarin (basic)

CITIZENSHIP USA, UK

LAST UPDATE July 8, 2024