Niven Achenjang

CONTACT INFORMATION

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EDUCATION

MIT **2020 – Present**
PhD Candidate, Mathematics
Advisor: Bjorn Poonen

Stanford University **2016 – 2020**
B.S. Mathematics, GPA: 3.96/4.00

PUBLICATIONS

N. Achenjang, D. Bhamidipati, A. Jha, C. Ji, and R. Lopez, The Brauer group of $\mathscr{Y}_0(2)$, *preprint (arXiv:2311.18132).* (2023)

N. Achenjang, The Average Size of 2-Selmer Groups of Elliptic Curves in Characteristic 2, *preprint (arXiv:2310.08493).* (2023)

N. T. Achenjang and J. S. Morrow, Integral Points on Varieties With Infinite Étale Fundamental Group, *International Mathematics Research Notices*, 2023.

N. Achenjang and A. Berger, On gaps in the closures of divisor functions, *International Journal of Number Theory.* **15** (2019), 1023 – 1036.

TALKS/ PRESENTATIONS

Integral Points on Varieties with Infinite Étale Fundamental Groups, GTA: Philadelphia 2024, Temple University. (June 2024)

The Brauer Group of Stacky $\mathscr{Y}_0(2)$, UW Number Theory Seminar, University of Washington. (April 2024)

The Mordell–Weil theorem and Chabauty's theorem, Seminar on Topics in Arithmetic, Geometry, Etc. (STAGE), MIT. (February 2024)

The Average Size of 2-Selmer Groups of Elliptic Curves over Function Fields, Harvard Number Theory Seminar, Harvard University. (February 2024)

An Overview of DGH's Proof of Uniform Mordell, Uniform Mordell Learning Seminar, Boston University. (February 2024)

The Average Size of 2-Selmer Groups of Elliptic Curves over Function Fields, Brown University Algebra Seminar, Brown University. (January 2024)

The Average Size of 2-Selmer Groups of Elliptic Curves over Function Fields, Boston University Number Theory Seminar, Boston University. (January 2024)

An Upper Bound for the Average Rank of Elliptic Curves over Global Function Fields, via 2-Selmer Groups, Joint Mathematics Meetings, San Francisco. (January 2024)

Automorphic forms for quaternion algebras I, Modularity/Fermat Seminar, MIT. (November 2023)

Integral models of modular curves, Seminar on Topics in Arithmetic, Geometry, Etc. (STAGE), MIT. (November 2023)

Galois Deformation Rings & Stating $R = \mathbb{T}$ *Theorems*, Modularity/Fermat Seminar,

MIT. (October 2023)

An Overview of the proof of Fermat, Modularity/Fermat Seminar, MIT. (September 2023)

Complex Multiplication, Shimura-Taniyama formula, Seminar on Topics in Arithmetic, Geometry, Etc. (STAGE), MIT. (May 2023)

The descent obstruction, Seminar on Topics in Arithmetic, Geometry, Etc. (STAGE), MIT. (December 2022)

Galois Reps at p, p-adic Hodge Theory Learning Seminar, Harvard University. (October 2022)

Local Heights and Arithmetic Surfaces, Gross-Zagier Seminar, Online. (July 2022)

Étale Topology, Étale Cohomology Learning Seminar, Online. (June 2022)

More on Hurwitz Spaces, Arithmetic Statistics Seminar, Harvard University. (April 2022)

Reparametrisation of Definable Sets, Harvard Number Theorists Seminar, Harvard University. (April 2022)

Proof of the New Gap Principle 1, Seminar on Topics in Arithmetic, Geometry, Etc. (STAGE), MIT. (April 2022)

Vojta's Approach to the Mordell Conjecture II, Seminar on Topics in Arithmetic, Geometry, Etc. (STAGE), MIT. (October 2021)

Vojta's Approach to the Mordell Conjecture I, Seminar on Topics in Arithmetic, Geometry, Etc. (STAGE), MIT. (October 2021)

Introduction to Class Field Theory, Juvitop Seminar, MIT. (February 2021).

Homological Stability for Mapping Class Groups of Surfaces, IAP Kan Seminar, MIT. (January 2021)

Forms of K-Theory, Kan Seminar, MIT. (December 2020)

Quillen's Work on Formal Groups and Complex Cobordism, Kan Seminar, MIT. (November 2020)

Cohomology Theories, Kan Seminar, MIT. (October 2020)

Smooth and étale morphisms, Seminar on Topics in Arithmetic, Geometry, Etc. (STAGE), MIT. (September 2020)

Basic Properties of the Riemann Zeta Function, Stanford Math Directed Reading Program Colloquium Session II, Winter 2019, Stanford University. (April 2019)

On Gaps in the Closures of Images of Divisor Functions, Joint Mathematics Meetings 2019, Baltimore. Joint work with Aaron Berger. (January 2019)

Seminar Organizing

Fall 2023	*Organizer*, Modularity/Fermat Seminar.
Spring 2022 – Fall 2023	*Co-organizer*, Seminar on Topics in Arithmetic, Geometry, Etc. (STAGE)

Teaching Experience

March 2024	Study Group Leader	Arizona Winter School
January 2024	DRP Mentor	MIT's Directed Reading Program
Fall 2023	Teaching Assistant	MIT 18.06 (Linear Algebra)
January 2023	DRP Mentor	MIT's Directed Reading Program
Fall 2022	Teaching Assistant	Preliminary Arizona Winter School
January 2022	DRP Mentor	MIT's Directed Reading Program
July 2021	Teaching Assistant	Park City Math Institute Undergraduate Session
January 2021	DRP Mentor	MIT's Directed Reading Program
Fall 2019	Teaching Assistant	Euler Circle Cryptography Class
Summer 2019	Teaching Assistant / Residential Counselor	Stanford University Mathematics Camp (SUMaC)
Spring 2018	Tutor	Stanford Math 122: Modules and Group Representations
Winter 2018	Grader	Stanford Math 62DM: Modern Mathematics: Discrete Methods
Summer 2016	Residential Counselor	VAMPY/SCATS Summer camps
Winter 2015	Teaching Assistant	High-school Calculus

Honors and Awards

2020 – 2023	*MIT Dean of Science Fellowship*
2020 – 2025	*National Science Foundation Graduate Research Fellowship*
2020	*Undergraduate Research Award* for my senior thesis.
2017	*Code2040 Fellow*
2016	*SanDisk Scholarship*
2016	*National Merit Finalist*
2016	*Ron Brown Captain*

Other Work Experience

Summer 2017 Software Engineering Intern at Affirm, San Francisco, CA

Programming Skills

Proficient	C/C++, Rust, Python, Mathematica
Advanced	Haskell, Octave, Common Lisp