

Jeremy Usatine

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Curriculum Vitae (updated June 14, 2023)

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Academic Positions

- 2023– **Assistant Professor**, *Florida State University*, Tallahassee, FL, USA.
2019–2023 **Tamarkin Assistant Professor**, *Brown University*, Providence, RI, USA.

Education

- 2019 **Ph.D. in Mathematics**, *Yale University*, New Haven, CT, USA.
Thesis: Motivic integration, tropicalization, and hyperplane arrangements
Advisor: Sam Payne
- 2014 **B.S. in Mathematics**, *Harvey Mudd College*, Claremont, CA, USA.
Thesis: Arithmetical graphs, Riemann-Roch structure for lattices, and the Frobenius number problem
Advisor: Dagan Karp

Research Interests

Algebraic geometry and combinatorics, including motivic integration, tropical geometry, and their applications to singularities, hyperplane arrangements, and matroids.

Publications and Preprints

- **Crepant resolutions of log-terminal singularities via Artin stacks** (with M. Satriano). Submitted.
- **A motivic change of variables formula for Artin stacks** (with M. Satriano). Submitted.
- **Gromov–Witten theory and invariants of matroids** (with D. Ranganathan). *Selecta Math. (N.S.)* 28 (2022), no. 4, Paper No. 69, 28 pp.
- **Stringy invariants and toric Artin stacks** (with M. Satriano). *Forum Math. Sigma* 10 (2022), Paper No. e9, 60 pp.
- **The motivic zeta functions of a matroid** (with D. Jensen and M. Kutler). *J. Lond. Math. Soc. (2)* 103 (2021), no. 2, 604–632.
- **Motivic zeta functions of hyperplane arrangements** (with M. Kutler). *Math. Proc. Cambridge Philos. Soc.* 175 (2023), no. 1, 187–215.
- **Hyperplane arrangements and mixed Hodge numbers of the Milnor fiber** (with M. Kutler). *Int. Math. Res. Not. IMRN* 2022, no. 11, 8644–8684.
- **Motivic volumes of fibers of tropicalization**. *Port. Math.* 77 (2020), no. 1, 73–110.
- **A topological structure on certain initial algebras** (with S. Anderson, A. Smith, P. Stewart, and M. Tesemma). *Topology Appl.* 180 (2015), 199–208.

- **Efficient algorithms for Zeckendorf arithmetic** (with C. Ahlback, C. Frougny, and N. Pippenger). *Fibonacci Quart.* 51 (2013), no. 3, 249–255.
- **Barred preferential arrangements** (with C. Ahlback and N. Pippenger). *Electron. J. Combin.* 20 (2013), no. 2, Paper 55, 18 pp.

Honors and Fellowships

- 2019 Dissertation Distinction, *Yale University*.
- 2014–2019 NSF Graduate Research Fellowship.
- 2014 Graduated with High Distinction, Honors in Mathematics, and Honors in Humanities, Social Sciences, and the Arts, *Harvey Mudd College*.
- 2013 Honorable Mention, Giovanni Borrelli Mathematics Fellowship, *Harvey Mudd College*.

Invited Talks

- Apr. 2023 Algebraic Geometry Seminar, *Stony Brook University*.
- Mar. 2023 Algebraic Geometry Seminar, *Duke University*.
- Jan. 2023 Colloquium, *Florida State University*.
- Jan. 2023 Algebra & Algebraic Geometry Seminar, *McMaster University*.
- Nov. 2022 Algebraic Geometry Seminar, *University of Cambridge*.
- Sep. 2022 2022 Route 81 Mathematics Conference, *Queen's University*.
- Aug. 2022 Geometry and Topology Seminar, *University of Waterloo*.
- May 2022 Fifth International Workshop on Zeta Functions in Algebra and Geometry, *Université Nice Sophia Antipolis*.
- Jan. 2022 Colloquium, *University of Western Ontario*. (Online).
- Nov. 2021 Algebraic Geometry Seminar, *Ohio State University*. (Online).
- Nov. 2021 Algebraic Geometry Seminar, *Brown University*.
- Oct. 2021 Combinatorics Seminar, *University of Vermont*.
- May 2021 Oberseminar Groups and Geometry, *Universität Bielefeld*. (Online).
- Apr. 2021 Tropical Geometry in Zoom, *Goethe-Universität Frankfurt am Main*. (Online).
- Mar. 2021 Spring Southeastern Sectional Meeting: Special Session on Tropical Geometry, F1-connections and Matroids, *Georgia Institute of Technology*. (Online).
- Nov. 2020 Groups, Arithmetic & Algebraic Geometry Seminar at EPFL, *École polytechnique fédérale de Lausanne*. (Online).
- Nov. 2020 Topology and Singularities Seminar in Madison, *University of Wisconsin-Madison*. (Online).
- Oct. 2020 Harvard–MIT Algebraic Geometry Seminar, *Harvard University* and *Massachusetts Institute of Technology*. (Online).
- Mar. 2020 Singularities and Algebraic Geometry, *Mienchung University of Civil Engineering*. (Postponed due to Covid-19).
- Dec. 2019 Geometry and Topology Seminar, *University of Waterloo*.
- Dec. 2019 Matroids Day, *University of Wisconsin-Madison*.

- Sep. 2019 Algebraic Geometry Seminar, *Brown University*.
- May 2019 Arrangements at Western, *University of Western Ontario*.
- Apr. 2019 Algebra Seminar, *University of Kentucky*.
- Dec. 2018 Algebra, Combinatorics, and Geometry Seminar, *University of Pittsburgh*.
- Nov. 2018 Algebra and Algebraic Geometry Seminar, *University of British Columbia*.
- Oct. 2018 Algebraic and Tropical Geometry Seminar, *Yale University*.
- May 2018 AMS Grad Student Conference at Brown: Algebraic Geometry and Number Theory, *Brown University*.

Teaching

- Spring 2023 Algebraic Geometry (Topic: Toric Varieties), Math 2060, *Brown University*.
- Fall 2022 Number Theory, Math 1560, *Brown University*.
- Spring 2022 Algebraic Geometry (Topic: Motivic Integration), Math 2060, *Brown University*.
- Fall 2021 Algebraic Geometry, Math 2050, *Brown University*.
- Spring 2021 Algebraic Geometry (Topic: Toric Varieties), Math 2060, *Brown University*.
- Fall 2020 Algebraic Geometry, Math 2050, *Brown University*.
- Spring 2020 Linear Algebra, Math 520, *Brown University*.
- Fall 2019 Linear Algebra (Course Head), Math 520, *Brown University*.
- Spring 2019 Calculus, Math 112, *Yale University*.
- Spring 2017 Calculus, Math 112, *Yale University*.

Conferences and Seminars Organized

- Spring 2023 Algebraic Geometry Seminar (with J. Bruce, S. Kannan, and P. Srinivasan), *Brown University*.
- Nov. 2020 Biannual Algebraic and Tropical Meetings of Brown and Yale (with D. Abramovich, K. Ascher, A. Auel, D. Bejleri, M. Brandt, M. Chan, Y. Liu, K. Mincheva, and N. Pflueger), *Brown University*. (Online)
- Spring 2020 Algebraic Geometry Seminar (with J. Kostiuk and R. Ramadas), *Brown University*.
- Nov. 2019 Biannual Algebraic and Tropical Meetings of Brown and Yale (with D. Abramovich, K. Ascher, A. Auel, M. Chan, Y. Liu, K. Mincheva, and N. Pflueger), *Brown University*.
- Fall 2019 Algebraic Geometry Seminar (with J. Kostiuk and R. Ramadas), *Brown University*.
- Jun. 2016 Student Tropical Algebraic Geometry Seminar (with D. Corey), *Yale University*.