

Noah Lars Braeger

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Education

Bachelor of Science (B.S.) in **Mathematics** - May 2021

Summa Cum Laude

Utah State University, Logan, Utah, USA

Bachelor of Science (B.S.) in **Physics** - May 2021

Summa Cum Laude

Utah State University, Logan, Utah, USA

Ph.D. in **Physics** - May 2026

University of Pennsylvania, Philadelphia, Pennsylvania, USA

Publications

1. Braeger, N., Malmendier, A., Sung, Y., (2020). "Kummer sandwiches and Greene-Plesser construction." *J. Geom. Phys.*, 154:103718, doi:10.1016/j.geomphys.2020.103718.
2. Braeger, N., Clingher, A., Malmendier, A., Spatig, S., (2021). "Isogenies of Certain K3 Surfaces of Rank 18." *Res. Math. Sci.*, 8:57, doi:10.1007/s40687-021-00293-0.

Conference Presentations and Workshops

MSRI Summer Graduate School in Tropical Geometry, St. Mary's College, Moraga, CA, 2022.

Braeger, N. and Malmendier, A. "An Isogeny Between Certain K3 Surfaces of Picard Rank 18." *Joint Mathematics Meetings*, Washington, DC, January 2021.

Braeger, N. "Clifford Algebras." *Learning Seminar on K-Theory*, Logan, UT, October 2020.

Braeger, N. "Counting Rational Points on Families of K3 Surfaces." *Southwestern Undergraduate Mathematics Research Conference*, Fort Collins, CO, April 2020. Unable to deliver; meeting cancelled due to COVID-19 outbreak.

Braeger, N. "Counting Rational Points on Curves and Surfaces." *University of Utah Undergraduate Colloquium*, Salt Lake City, UT, November 2019.

Braeger, N. and Malmendier, A. "Mirror Symmetry for Multi-Parameter K3 Surfaces." *2019 Annual Meeting of the Four Corners Section*, Prescott, AZ, October 2019.

Braeger, N. "What are Kummer Surfaces?" *Explicit Methods for Abelian and K3 Varieties*, Logan, UT, July 2019.

Research Grants

National Science Foundation Graduate Research Fellowship
University of Pennsylvania, May 2021 - May 2026

Council of Undergraduate Research and Goldwater Scholarship Foundation Summer Research Fellow (\$2000)
Utah State University, May 2019 - August 2019

College of Science Minigrant (\$1000)
Utah State University, May 2019 - August 2019

Undergraduate Research and Creative Opportunities (URCO) Grant (\$1000)
Utah State University, August 2019 - August 2020

Awards & Honors

2021:

- *Robins Award - Undergraduate Researcher of the Year*, Utah State University
- *Undergraduate Researcher of the Year*, Utah State University College of Science
- *Undergraduate Researcher of the Year*, Utah State University Department of Mathematics & Statistics
- *David and Terry Peak Outstanding Achievement Award in Physics*, Utah State University Department of Physics

2020:

- *Science Senator Scholarship*, Utah State Student Involvement and Leadership Center
- *Neville & Annie Hunsaker Scholarship*, Utah State University Department of Mathematics & Statistics.
- *Charles & Leah Hendricks Award*, Utah State University Department of Physics
- *Undergraduate Researcher of the Year*, Utah State University Department of Mathematics & Statistics
- *Outstanding Undergraduate Mathematics Award*, Utah State University Department of Mathematics & Statistics

2019:

- *Goldwater Scholarship Nominee*, Utah State University
- *O. Harry Otteson Award*, Utah State University Department of Physics
- *Arthur van Vliet Scholarship*, Utah State University Department of Mathematics & Statistics
- *Charles & Ray Perkins Scholarship*, Utah State University College of Science
- *USUSA Director Scholarship*, Utah State University Student Involvement and Leadership Center
- *"A" Pin Award*, Utah State University

2018:

- *Martha Hoyt Scholarship*, Utah State University
- *Utah State Class of "27" Fund*, Utah State University
- *"A" Pin Award*, Utah State University

2017:

- "A" Pin Award, Utah State University

2016:

- *Sons of Utah Pioneers Scholarship*, National Society of the Sons of Utah Pioneers
- *Regents Scholarship*, Utah State University

Teaching and Work Experience

Teaching Assistant

University of Pennsylvania, Philadelphia, PA.

August 2022 - December 2022

Graded weekly assignments and held weekly office hours.

- AMCS 5100, Complex Analysis

Directed Reading Program Mentor

University of Pennsylvania, Philadelphia, PA.

August 2022 - December 2022

Mentor to the project:

- General Relativity and Gravitational Waves, Sophie Kadan

National Science Foundation Graduate Research Fellowship Workshop Mentor

Utah State University, Logan, UT.

August 2021 - December 2021

Advised three senior undergraduates applying for the NSF GRFP.

Director's Summer Program Intern

National Security Agency, Washington D.C.

May 2021 - August 2021

- Developed models that analyzed the security of Random Forest Classifiers and verified such models using Python and scikit-learn.
- Compiled findings into a co-authored internally refereed research paper.
- Presented findings to the Institute for Defense Analyses at the Princeton Center for Communications Research and the Director of the National Security Agency.

Grader

Utah State University, Logan, UT.

August 2018 - December 2018, January 2021 - May 2021

Graded weekly assignments and held regular office hours.

- Spring 2021, Differential Geometry, Math 5110.
- Fall 2018, Calculus I, Math 1220

Recitation Leader

Utah State University, Logan, UT.

January 2019 - May 2021

Taught, graded assignments and exams, and held regular office hours.

- Spring 2019, Introduction to Linear Algebra, Math 2270, Sections 504 & 506.
- Fall 2019, Multivariable Calculus, Math 2210, Section 505.
- Spring 2020, College Algebra, Math 1050, Section 501.

- Fall 2020, Calculus II, Math 1220, Sections 502 & 503.
- Spring 2021. Calculus II, Math 1220, Section BFPY.

Teaching Assistant

Utah State University, Logan, Utah.

May 2018 - June 2019

Graded weekly essays and hosted regular review sessions.

- Summer 2018, Fall 2018, Spring 2019, and Summer 2019, Great Scientists, Physics 3020.

Organization Memberships

Penn Graduate Student Seminar

Fall 2022 - Spring 2023

Co-organizer of the graduate student seminar in the mathematics department with Oualid Merzouga and Qishuo Yin.

TEDxUSU Unity Head Organizer

May 2020 - May 2021

Oversaw the production of seven TEDx talks, all ticketing and venue planning, the creation of a website for event information, the designing of promotional materials, the arrangement of contracts for an out of state speaker and musician, and a catered dinner event for all attendees.

Utah State College of Science Senator

May 2020 - May 2021

Oversaw all events organized by the College of Science and contributed to the development of a college-wide mentorship program.

Utah State Science Council President

May 2019 - May 2020

Led a group of twenty-five undergraduate student volunteers from the College of Science in organizing undergraduate research symposiums, networking events, and social events that integrated new students into college life.

Utah State College of Science Ambassador

August 2018 - May 2021

Represented the College of Science and its five departments at student recruiting events, alumni and guest functions, and Utah State's Science Unwrapped.