

# Travis Morrison

University of Waterloo                      travis.morrison@uwaterloo.ca  
Institute for Quantum Computing    https://uwaterloo.ca/scholar/t9morrison  
Quantum Nano Centre                      Citizenship: USA  
Waterloo, Ontario, Canada              Languages: English

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## EMPLOYMENT

2018 –            Postdoctoral fellow, University of Waterloo, The Institute for Quantum Computing

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## EDUCATION

2018 05            Ph.D. Mathematics, Pennsylvania State University  
                          (Advisor: Kirsten Eisenträger)  
2012 06            B.A. Mathematics, University of California, Santa Cruz

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## RESEARCH INTERESTS

Number theory, arithmetic geometry, and applications to cryptography

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## PUBLICATIONS

1. Cycles in the supersingular isogeny graph and corresponding endomorphisms. (with Efrat Bank, Catalina Camacho-Navarro, Kirsten Eisenträger, and Jennifer Park. *Submitted for publication*. [arXiv:1804.04063](#), 23 pages.
2. Diophantine definability of nonnorms of cyclic extensions of global fields. *To appear in Transactions of the AMS*. [arXiv:1710.07357](#), 24 pages.
3. Supersingular isogeny graphs and endomorphism rings: reductions and solutions (with Kirsten Eisenträger and Sean Hallgren and Kristin Lauter and Christophe Petit). *To appear in EUROCRYPT 2018*. 40 pages.
4. Universally and existentially definable subsets of global fields (with Kirsten Eisenträger). *To appear in Mathematical Research Letters*. [arXiv:1609.09787](#), 21 pages.

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## INVITED RESEARCH TALKS

2019 03            “AMS Spring Central and Western Sectional Meeting, Special Session on Emerging Connections in Number Theory” Honolulu, HI  
                          03            “AMS Spring Central and Western Sectional Meeting, Special Session on The Mathematics of Cryptography” Honolulu, HI  
2018 11            “Elliptic Curve Cryptography 2018” Osaka  
                          5            Korean Institute for Advanced Study, Number theory seminar  
                          4            Cornell University, Number theory seminar  
                          3            Tufts University, Algebra, geometry, and number theory seminar  
2017 12            University of Michigan, Ann Arbor, Group, Lie, and number theory seminar

- 11 “Rutgers-Newark Junior Number Theory Days” Newark, NJ  
 09 Pennsylvania State University, Algebra and number theory seminar  
 03 “Southeastern AMS Sectional Meeting, Special Session on Computability in Algebra  
 and Number Theory” Charleston, SC  
 2016 10 “Definability and Decidability Problems in Number Theory” Oberwolfach  
 10 Pennsylvania State University, Algebra and number theory seminar

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### CONTRIBUTED TALKS

- 2018 4 ”Upstate Number Theory 2018” SUNY Buffalo  
 1 “Joint Mathematical Meetings, MAA General Contributed Paper Session on Number  
 Theory”, II  
 2017 05 “Upstate Number Theory 2017” Binghamton University

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### VISITING APPOINTMENTS

- 2017 05 Intern, Microsoft Research, Cryptography group. (Mentor: Kristin Lauter)

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### ACADEMIC HONORS

- 2018 Ayoub Award in Algebra and Number Theory, Pennsylvania State Mathematics Department  
 Global Programs Graduate Student Travel Grant, Pennsylvania State University (Declined)  
 2017 Mathematics department nominee for university-wide Penn State Alumni Association  
 Dissertation Award, 2017  
 2011 Merit Fellowship, Outstanding project in Geometry, and Outstanding Project in Algebra, MASS 2011

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### COMPUTER EXPERIENCE

- Languages: Python
- Packages: Sage, Magma, Macaulay 2

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### TEACHING EXPERIENCE

#### PENN STATE UNIVERSITY, UNIVERSITY PARK

- 2018 01 Math 231: Multivariable Calculus, *Instructor*  
 2015 – 2017 Ritner Experience, *Tutor*  
 2015 08 Math 231: Multivariable Calculus, *Instructor*  
 Math 232: Integral and Vector Calculus, *Instructor*  
 2015 01 Math 36: Insights into Mathematics *Instructor*  
 2014 08 Math 36: Insights into Mathematics *Instructor*  
 01 Math 21: College Algebra II *Instructor*  
 2013 08 Math 36: Insights into Mathematics *Instructor*  
 2013 08 Math 110: Business Calculus *Teaching Assistant*

- 06 Math 251: Ordinary Differential Equations *Instructor*  
01 Math 313a: Concepts of Geometry *Teaching Assistant*

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**SERVICES**

- 2013 – 2017 Penn State, Climate and Diversity Workshop, *Organizer, Lead organizer in 2015, nominated for Eberly College of Science Climate and Diversity Award in 2015.*
- 2013 – 2015 Penn State, Graduate Student Number Theory Seminar, *Organizer*
- 2015 – 2016 Penn State, Expand Your Horizons Workshop, Cryptography course, *Teaching Assistant*