Travis Morrison

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EMPLOYMENT

2020 –	Assistant Professor, Virginia Tech University
2018 – 2020	Postdoctoral fellow, University of Waterloo, The Institute for Quantum Computing

VISITING APPOINTMENTS

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

EDUCATION

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

RESEARCH INTERESTS

Number theory and applications to cryptography.

PUBLICATIONS

1. Chabauty-Coleman computations on rank one Picard curves. (with Sachi Hashimoto). 2020. Simons Symposia: Arithmetic Geoemtry, Number Theory, and Compuation. arXiv:2002.03291

2. Computing endomorphism rings of supersingular elliptic curves and connections to pathfinding in isogeny graphs. (with Kirsten Eisenträger, Sean Hallgren, Chris Leonardi, and Jennifer Park). pp. 215–232 in Proceedings of the Fourteenth Algorithmic Number Theory Symposium (ANTS-XIV), edited by Steven Galbraith, Open Book Series 4, Mathematical Sciences Publishers, Berkeley, 2020. arXiv:2004.11495.

3. Diophantine definability of nonnorms of cyclic extensions of global fields. *Transactions of the AMS 372, pp. 5825-5850 (2019)*. arXiv:1710.07357.

4. Cycles in the supersingular isogeny graph and corresponding endomorphisms. (with Efrat Bank, Catalina Camacho-Navarro, Kirsten Eisenträger, and Jennifer Park). *Research Directions in Number Theory: Women in Numbers 4, (2019)*. arXiv:1804.04063.

5. Supersingular isogeny graphs and endomorphism rings: reductions and solutions (with Kirsten Eisenträger and Sean Hallgren and Kristin Lauter and Christophe Petit). *EUROCRYPT 2018*. 40 pages.

6. Universally and existentially definable subsets of global fields (with Kirsten Eisen-
träger). *Mathematical Research Letters, Volume 25, No. 4 (2018)*. `arXiv:1609.09787`.

Papers submitted for publication and preprints

1. Homomorphic Encryption Standard. (with Martin Albrecht and Melissa Chase and
Hao Chen and Jintai Ding and Shafi Goldwasser and Sergey Gorbunov and Shai
Halevi and Jeffrey Hoffstein and Kim Laine and Kristin Lauter and Satya Lokam
and Daniele Micciancio and Dustin Moody and Travis Morrison and Amit Sahai
and Vinod Vaikuntanathan). 2019. *Preprint.*

Invited Research Talks

2020	11	ACCESS, virtual
	1	Clemson University, Colloquium
2019	11	Virginia Tech University, Colloquium
	11	Mcmaster Unversity, Model theory seminar
	10	Carnegie Mellon University, Algorithms, complexity, and optimization seminar
	10	University of Vermont, Arithmetic geometry seminar
	06	Microsoft Research, Cryptography colloquium
	05	"49th John H. Barrett Memorial Lectures", University of Tennessee, Knoxville, TN
	03	"AMS Spring Central and Western Sectional Meeting, Special Session on Emerging Connections in Number Theory" Honolu, HI
	03	"AMS Spring Central and Western Sectional Meeting, Special Session on The Mathematics of Cryptography" Honolu, HI
	01	"Joint Mathematics Meetings, AMS special session on Definability and decidability problems in number theory", Baltimore, MD
2018	11	"Elliptic Curve Cryptography 2018" Osaka
	5	Korean Instute 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

Contributed Talks

2018	4	"Upstate Number Theory 2018" SUNY Buffalo

	1	"Joint Mathematical Meetings, MAA General Contributed Paper Session on Number Theory II" San Diego, CA
2017	05	"Upstate Number Theory 2017" Binghamton University

ACADEMIC HONORS

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

LEADERSHIP ROLES IN CONFERENCES

2021	1	Organized the AMS special session at JMM 2021 on "Mathematics of cryptography" with Angela Robinson and Gretchen Matthews.
2020	10	Project leader for "Rethinking Number Theory"

COMPUTER EXPERIENCE

- Languages: Python
- Packages: Sage, Magma

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*

SERVICES

2020 –	Coorganizer of Virginia Tech Algebra seminar
2019 – 2020	Organized cryptography reading group seminar at University of Waterloo
2017 – 2019	Reviewer or referee for: PQCrypto 2018, manuscripta mathematica, Crypto 2019, Number-Theoretic Methods in Cryptography 2019, Selected Areas in Cryptography 2019, ASIACRYPT 2020, .
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*