

ELI ORVIS

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RESEARCH AREAS	Arithmetic geometry; elliptic curves; post-quantum cryptography		
EDUCATION & RESEARCH POSITIONS	University of Colorado, Boulder PhD, expected 2026 <i>Advisor: Katherine E. Stange</i>		
	IBM Research, Zürich Research intern, April — July 2025 <i>Mentor: Luca De Feo</i>		
	Carleton College BA, 2018		
	Budapest Semesters in Mathematics Fall 2015		
PUBLICATIONS & PREPRINTS	Ihara zeta functions of abstract isogeny graphs and modular curves	2025	
	joint with J. Bo Lau, T. Morrison, G. Scullard, and L. Zobernig <i>Submitted</i>		
	Hypergeometric decomposition of Delsarte K3 surfaces	2025	
	joint with R. Davis, J. Dukes, T. Ribeiro, A. Salerno, and U. Whitcher <i>Submitted</i>		
	Experimental investigations for Lehmer's Conjecture on elliptic curves	2025	
AWARDS	joint with S. Cats, J. M. Clark, M. Curcó Iranzo, C. Dombrowsky, and K. Maughan <i>to appear, Proceedings of LuCaNT II</i>		
	Distribution of cycles in supersingular ℓ-isogeny graphs	2025	
	<i>Journal of Number Theory</i> Volume 277, 2025, 236-261		
	Newly reducible polynomial iterates	2021	
	joint with P. Illig, R. Jones, N. Spinale, Y. Segawa <i>International Journal of Number Theory</i> 17(2021), no. 6, 1405-1427		
AWARDS	IBM PhD Fellowship, 2024-2025		\$40,000
	Burton W. Jones Teaching Excellence Award, 2025		\$500
	CU Graduate School Fellowship 2024		\$6,000
	Natural Sciences Dean's Summer Fellowship, 2023		\$5,500
	Haller Fellowship, 2022		\$5,500

SELECTED
PROFESSIONAL
ACTIVITIES

Study group leader, Arizona Winter School 2026

Lead discussions for Kirsten Eisentraeger's course on
Supersingular isogeny graphs in Cryptography

Peer reviewer, *EuroCrypt 2026*

Peer reviewer, *Design, Codes, and Cryptography*

Peer reviewer, *Public Key Cryptography, 2026*

Problem session leader, Preliminary Arizona Winter School 2025

Write problem sets and lead problem sessions for Sabrina Kunzweiler's course on
Introduction to Mathematical Cryptography

INVITATIONAL
CONFERENCES &
WORKSHOPS

Banff International Research Station, 2023, 2025

Invited participant to BIRS workshops on isogeny-based cryptography.
Participation lead to the paper *Ihara zeta functions of abstract isogeny graphs and modular curves*

Arizona Winter School, 2024

Member of Joe Silverman's Project Group.
Participation lead to the paper *Experimental investigations on Lehmer's Conjecture for elliptic curves*

Rethinking Number Theory 4

Participation lead to the paper *Hypergeometric decomposition of Delsarte K3 surfaces*

INVITED
TALKS

Joint Mathematics Meeting, January 2026*

- *Ihara zeta functions of supersingular isogeny graphs and modular curves*
 - Special Session on Algebraic and Analytic Aspects of Curves and L-functions
- *Combining Delfs-Galbraith with inseparable isogenies*
 - Special Session on Mathematics of Isogeny-based Cryptography
- *Hypergeometric Decomposition of Delsarte K3 Pencils*
 - Special Session on Rethinking Number Theory

FRAGMENT Seminar, January 2026*

Hypergeometric Decomposition of Delsarte K3 Pencils

Isogeny Club, November 2025

Ihara zeta functions of abstract isogeny graphs and modular curves

AMS Southeastern Section Meeting, October 2025

Ihara zeta functions of supersingular isogeny graphs and modular curves

LMFDB, Computation, and Number Theory (LuCaNT), July 2025

Experimental investigations on Lehmer's Conjecture for elliptic curves

Swissogeny Day, June 2025

Cycles in (abstract) isogeny graphs: how to count and find them

*Denotes an upcoming talk.

Isogeny Days 5, September 2024
On the distribution of cycles in isogeny graphs

AMS Eastern Sectional Meeting, April 2024
Counting cycles along the spine

SERVICE &
MENTORSHIP

Directed Reading Program, CU Boulder
Founder & Mentor

Joint with Jon Kim, founded a DRP at CU Boulder, which pairs graduate students with undergraduates for a one-credit course reading material outside the usual undergraduate curriculum.

Front Range Number Theory Day, 2021-Present
Organizer

Undergraduate independent reading, Summer 2024
Mentor

Number Theory Reading Group, CU Boulder
Organizer

- Modular Forms, Fall 2025
- p -adic analysis, Summer 2024
- Local Fields, Spring 2022

Graduate and Professional Student Government, 2023-2024
Representative

CLASSROOM
TEACHING

Primary Instructor

- Calculus I Fall 2021, Spring 2022, Spring 2023
- Calculus II Fall 2022, Spring 2024
- Data & Models Fall 2023

Teaching Assistant

- Calculus I Fall 2020
- Calculus II Spring 2021
- Calculus III Spring 2026

CONTRIBUTED
TALKS

BIRS Workshop on Isogeny-based Cryptography (lightning talk), August 2025
Ihara zeta functions of abstract isogeny graphs and modular curves

The SQIParty: a workshop on isogeny-crypto, April 2025
Generalized class group actions via class field theory

Front Range Number Theory Day (lightning talk), October 2024
Path lengths between valleys in supersingular isogeny graphs II

IBM/SLMath Summer School on Post-Quantum Cryptography, July 2024
Counting paths between oriented supersingular elliptic curves

Front Range Number Theory Day (lightning talk), April 2023
Path lengths between valleys in supersingular isogeny graphs

CU Boulder Number Theory Seminar, September 2022
Introduction to SIDH

CU Boulder Graduate Student Seminar, April 2022
Algebra and Numbers and Curves, Oh my!

Front Range Number Theory Day (lightning talk), April 2021
Newly reducible polynomial iterates

CONFERENCES
ATTENDED

- Atelier libpari 2025
- Eurocrypt 2025
- The SQIParty: a workshop on isogeny-crypto
- Algorithmic Number Theory Symposium XVI
- PRIMA Congress 2022
- Algorithmic Number Theory Symposium XV
- Summer School on Post-Quantum Cryptography, Budapest

INDUSTRY
WORK
EXPERIENCE

Analysis Group, Inc.

August 2018 — August 2020

Analyst, Senior Analyst

Statistical research on health economics and outcomes.

My work with Analysis Group led to the following publications:

- *Same-day testing with initiation of antiretroviral therapy or tuberculosis treatment versus standard care for persons presenting with tuberculosis symptoms at HIV diagnosis: A randomized open-label trial from Haiti*¹
N. Dorvil et al. — PLoS medicine 20 (6) e1004246
- *Economic benefit from improvements in quality of life with upadacitinib: Comparisons with tofacitinib and methotrexate in patients with rheumatoid arthritis*
M. Bergman et al. — Advances in therapy 38, 5649-5661
- *FAST tuberculosis transmission control strategy speeds the start of tuberculosis treatment at a general hospital in Lima, Peru*¹
D.B. Tierney et al. — Infection Control & Hospital Epidemiology 43 (10), 1359-1465
- *Incidence of acute otitis media in children in the United States before and after the introduction of pneumococcal conjugate vaccines (PCV7 and PCV13) during 1998-2018*
T. Hu et al. — Open Forum Infectious Diseases 7 (Supplement 1), S740-S741
- *Quality of life of patients with long-chain fatty acid oxidation disorders before and during treatment with Triheptanoin*
E. Kruger et al. — International Journal of Technology Assessment in Health Care 36 (S1), 41-41
- *Economic benefit from improvements in health-related quality of life with Upadacitinib and comparisons with Tofacitinib and Methotrexate in patients with moderately to severely active Rheumatoid Arthritis*
A. Bensimon et al. — Annals of the Rheumatic Diseases 79 (Supplement 1), 1864-1865

PROGRAMMING
& NATURAL
LANGUAGES

Sage, Magma (fluent); English, Portuguese (fluent); French (beginner)

¹Work on this project was done Pro Bono in support of global health research and initiatives.