

# Jonathan Love

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## EDUCATION AND EMPLOYMENT

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- 1 SEP 2024 Postdoctoral Scholar, **Leiden University**, Leiden, the Netherlands  
– (ONGOING) Supervisor: Jan Vonk
- 1 AUG 2021 CRM-ISM Postdoctoral Fellow, **McGill University**, Montreal, Canada  
– 31 JUL 2024 Supervisors: Henri Darmon, Eyal Goren, and Michael Lipnowski
- JUN 2021 PhD in MATHEMATICS, **Stanford University**, Stanford, USA  
Advisors: Akshay Venkatesh, Dan Boneh, and Ravi Vakil  
Thesis: “Isogeny Graphs, Zero-cycles, and Modular Forms: Computations over Algebraic Curves and Surfaces”
- NOV 2016 MSc in MATHEMATICS, **University of Toronto**, Toronto, Canada  
Advisor: Jacob Tsimerman  
Thesis: “Field Extensions Generated by Kernels of Isogenies”
- APR 2015 Honours Bachelor of Science in MATHEMATICS, **University of Toronto**, Toronto, Canada

## PAPERS AND PREPRINTS

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1. “Arithmetic intersections on non-split Cartan modular curves” with Elie Studnia and Jan Vonk. 28 pgs. *Submitted* ([PDF](#))
2. “Hypersurfaces passing through the Galois orbit of a point” with Shamil Asgarli and Chi Hoi Yip. 27 pgs. *Submitted* ([arXiv](#))
3. “On  $\ell$ -torsion in degree  $\ell$  superelliptic Jacobians over  $F_q$ ” with Wanlin Li and Eric Stubbley. 35 pgs. *Submitted* ([arXiv](#))
4. “Supersingular elliptic curves, quaternion algebras and applications to cryptography” with Eyal Z. Goren. *NATO Science for Peace and Security Series - D: Information and Communication Security*, Vol. 66: Abelian Surfaces and Isogeny-based Cryptography (2025) pp. 123–200 ([DOI](#))
5. “Local and local-to-global principles for zero-cycles on geometrically Kummer K3 surfaces” with Evangelia Gazaki. Accepted for publication in *Annals of K-Theory*. 27 pgs ([arXiv](#))
6. “Hyperelliptic curves mapping to abelian varieties and applications to Beilinson’s Conjecture for zero-cycles” with Evangelia Gazaki. *Advances in Mathematics*, Vol. 487 (2026) 38 pgs ([DOI](#))
7. “Rational configuration problems and a family of curves.” *Journal of Number Theory*, Vol. 269 (2025) pp. 370–396 ([DOI](#))
8. “On elements of prescribed norm in maximal orders of a quaternion algebra” with Eyal Z. Goren. *Canadian Journal of Mathematics*, Vol. 77, Issue 6 (2025), pp. 1938–1965 ([DOI](#))
9. “Torsion phenomena for zero-cycles on a product of curves over a number field” with Evangelia Gazaki. *Research in Number Theory*, Vol. 10, No. 35 (2024), 19 pgs ([DOI](#))
10. “Root Numbers of a Family of Elliptic Curves and Two Applications.” *Indagationes Mathematicae*, Vol. 35, Issue 3 (2024) pp. 555–569 ([DOI](#))

11. “An Arithmetic Variant of Raynaud’s Theorem” with Libby Taylor. 16 pgs. *Submitted* ([arXiv](#))
12. “Rational Equivalences on Products of Elliptic Curves in a Family.” *Journal de Théorie des Nombres de Bordeaux*, Vol. 32, No. 2 (2020) pp. 923–938 ([DOI](#))
13. “Supersingular Curves With Small Non-integer Endomorphisms” with Dan Boneh. In *Proceedings of the Fourteenth Algorithmic Number Theory Symposium*, ed. Steven D. Galbraith. *The Open Book Series*, Vol. 4, No. 1 (2020) pp. 7–22 ([DOI](#))

## STUDENTS SUPERVISED

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CURRENT Pjotr Beerens: Master’s Thesis, Leiden  
 2025 Robbe Rietveld: [Modular Arithmetic of Quaternion Norms](#), Bachelor’s Thesis, Leiden

## RECENT PRESENTATIONS

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### INVITED

DEC 2025 Leiden Mathematical Institute Master’s Colloquium  
 NOV 2025 Illinois State University Undergraduate Mathematics Colloquium  
 OCT 2025 Leiden University Mathematics Colloquium  
 JUL 2025 King’s College London Department of Mathematics  
 MAY 2025 The Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM) minisymposium: Finite Fields and Finite Geometry  
 MAY 2025 Centre Interuniversitaire en Calcul Mathématique Algébrique (CICMA) Special Lecture  
 MAY 2025 Institut de Mathématiques de Jussieu–Paris Rive Gauche (IMJ–PRG) Number Theory Seminar  
 APR 2025 Leiden University AGNT Seminar  
 APR 2025 The Isogeny Club (online)  
 MAR 2025 University of Michigan Math Club  
 MAR 2025 University of Michigan GLNT Seminar  
 MAR 2025 University of North Carolina Chapel Hill Department of Mathematics  
 JAN 2025 Washington University in St. Louis AAG Seminar  
 JAN 2025 University of Pittsburgh ACG Seminar  
 DEC 2024 Groningen Algebra Seminar  
 NOV 2024 KULB-seminars (KU Leuven)  
 OCT 2024 Intercity Number Theory Seminar (Leiden University)  
 SEP 2024 Utrecht Algebraic Geometry Seminar  
 APR 2024 Front Range Number Theory Day (CU Boulder)  
 MAR 2024 McGill Arithmetic Geometry Graduate Student Seminar  
 DEC 2023 Canadian Mathematical Society (CMS) Session: Number theory by early career researchers  
 AUG 2023 Applied Mathematics, Modeling and Computational Science (AMMCS) Session: Computational Number Theory  
 FEB 2023 Fields Number Theory Seminar (online)  
 DEC 2022 Canadian Mathematical Society (CMS) Session: Diophantine Arithmetic Geometry and Number Theory

- DEC 2022 Washington University in St. Louis AAG Seminar
- APR 2022 American Mathematical Society (AMS) Session:  
Explicit Methods in Modularity (online)
- MAR 2022 Montréal Online Biweekly Inter-University Seminar on Analytic  
Number Theory (MOBIUS ANT)
- NOV 2021 Ottawa-Carleton Number Theory Seminar
- SEP 2021 Québec-Vermont Number Theory Seminar
- MAR 2021 University of Virginia Number Theory Seminar
- FEB 2021 Québec-Vermont Number Theory Seminar

CONTRIBUTED

- AUG 2025 Banff International Research Station (BIRS) Workshop:  
Isogeny Graphs in Cryptography
- APR 2025 Leiden Preprint Algebraic geometry and Number theory Cake  
(PANCake) Seminar
- NOV 2024 Discrete, Interactive and Algorithmic Mathematics, Algebra and  
Number Theory (DIAMANT) Symposium
- JUN 2024 Canadian Number Theory Association
- OCT 2023 Maine-Québec Number Theory Conference
- APR 2023 Postdocs at Centre de recherches mathématiques (CRM) Seminar
- OCT 2022 Québec-Maine Number Theory Conference
- JUL 2022 Park City Mathematics Institute
- OCT 2021 Maine-Québec Number Theory Conference
- JUL 2020 Fourteenth Algorithmic Number Theory Symposium (online)

## TEACHING POSITIONS

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- JAN 2025 Instructor at LEIDEN UNIVERSITY
- PRESENT Mathematics for Quantum Physics (QIST4100), Fall 2025  
Topics in Algebraic Number Theory (4373TOANT), Winter 2025
  
- JAN 2022 Instructor at MCGILL UNIVERSITY
- APR 2023 Number Theory / Honours Number Theory (MATH 346/377), Winter 2023  
Discrete Structures (MATH 240), Winter 2022
  
- JAN 2017 Teaching Assistant / Course Assistant at STANFORD UNIVERSITY
- MAR 2021 Linear Algebra and Multivariable Calculus (MATH 51), Fall 2018, Fall 2020  
Differential Equations (MATH 53), Spring 2017  
Modern Mathematics: Discrete Methods (MATH 62DM), Winter 2018, Winter 2020  
Applied Matrix Theory (MATH 104), Spring 2020  
Linear Algebra and Matrix Theory (MATH 113), Winter 2021  
Groups and Rings (MATH 120), Fall 2017, Spring 2019
  
- SUMMER Mentor at CANADA/USA MATHCAMP
- 2018, 19 Developed curriculum for and taught 25 hours of course material each summer.
  
- SEP 2012 Teaching Assistant at UNIVERSITY OF TORONTO
- AUG 2016 Calculus (MAT135), Fall 2012  
Calculus! (MAT137), 2013-14  
Engineering Calculus (MAT187), Winter 2013  
Groups, Rings, and Fields (MAT347), 2014-15, 2015-16.

## OUTREACH, MENTORSHIP, AND SERVICE

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- NOV 2024 Institute Council (Instituutsraad) Member  
– PRESENT Mathematics Institute, Leiden University
- 2024 Mathematics Foundation of America (MFOA) Planning Committee
- JUL 2024 Program Committee: Algorithmic Number Theory Symposium
- JAN 2024 Organizer: JMM Special Session on Explicit Computations with Stacks
- SEP 2023 Research Supervisor at MCGILL UNIVERSITY  
– APR 2024 Supervising two undergraduate students studying elliptic curves, and one studying quaternion algebras (MATH 470)
- SUMMER Academic Coordinator at CANADA/USA MATHCAMP  
2021 A 5-week long summer program for mathematically advanced high school students. Designed the academic schedule for the program, invited guest speakers, and coordinated teacher training and development.
- MAR – MAY Teaching Assistant at ARIZONA WINTER SEMESTER  
2021 Developed problem sets and held office hours for a 6-week course on  $p$ -adic numbers and  $p$ -adic modular forms.
- MAR 2018 Teaching Assistant at GEOMETRY OF REDISTRICTING (San Francisco)  
2-day conference hosted by the Metric Geometry and Gerrymandering Group. Facilitated group activities designed to train high school math teachers and college professors in the mathematics of gerrymandering, voting, and apportionment.
- APR 2017 Directed Reading Program Mentor at STANFORD UNIVERSITY  
– JUN 2021 Worked with eight undergraduate students on an individual basis; one meeting per week for 10 weeks each
- MAR 2014, Lecturer at MARCH BREAK MATH ACADEMY, Toronto, Canada  
MAR 2015 5 days, 7 hours per day. Hosted by University of Toronto Schools.
- VARIOUS Guest Speaker  
Gunn High School Math Circle, Palo Alto, Feb 2020  
The Wilberforce School, Princeton, Mar 2019  
University of Toronto Mississauga Math Circle, Apr 2015, Nov 2015, Feb 2016  
Pre-Concert Lecture for Aradia Ensemble, Toronto, Oct 2014

## GRANTS AND AWARDS

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- 2021-23 CRM-ISM Postdoctoral Fellowship
- JUN 2021 Centennial Teaching Assistant Award, Stanford University
- JUL 2020 Selfridge Prize, Algorithmic Number Theory Symposium

## COMPUTER SKILLS

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WORKING Sage, Mathematica, Magma, Python

BASIC HTML, CSS, PHP, Javascript, PARI/GP

My Github page (<https://github.com/jonathanrlove>) contains a sample of my computational work, including the following projects:

- Computing supersingular isogeny graphs and identifying curves that have non-integer endomorphisms of small degree (supporting the paper “Supersingular Curves With Small Non-integer Endomorphisms”)
- Producing rational equivalences on certain products of elliptic curves (supporting the paper “Torsion phenomena for zero-cycles on a product of curves over a number field”)
- Computing cusp forms over function fields, using an algorithm that tests for isomorphisms between rank 2 vector bundles (supporting my PhD thesis)