

HARUN KIR

Academic Positions

- 1 Oct. 2024– (ongoing) **Post-doctoral Researcher**, *École normale supérieure de Lyon (ENS de Lyon)*, UMPA, France
Supervisor: Benjamin Wesolowski. Funded by the PEPR PQ-TLS project.

Education

- 2019–2024 **Ph.D. Department of Mathematics and Statistics**, *Queen's University*, Kingston, Canada
Thesis supervisor: Prof. Ernst Kani. Thesis title: Curves of genus 2 and quadratic forms.
- 2016–2019 **M.Sc. in Mathematics**, *Bogazici University*, Istanbul, Turkey
Thesis supervisor: Prof. Ekin Özman. Thesis title: Class number one problem and modular curves.
- 2012–2016 **B.Sc. in Mathematics**, *Bogazici University*, Istanbul, Turkey

Research Interests

- Algebraic and Arithmetic Geometry
 - Elliptic curves, genus 2 curves, abelian varieties, Humbert surfaces, Shimura curves, moduli spaces, modular and automorphic forms
- Algebra and Number Theory
 - Algebraic number theory, quadratic forms, quaternion algebras, isogeny-based cryptography

Publications

Preprints and Articles

1. **Rapid mixing in superspecial isogeny graphs**, with M. Corte-Real Santos, O. Taïbi and B. Wesolowski, (preprint), [2026/2429](#)
2. **Generating sets for maximal orders in rational quaternion algebras**, with K. Eisenträger, E. Z. Goren, A. Iezzi, E. Kırımlı, J. Love, W. E. Mahaney, J. Park and M. Sabitova, (preprint), [arXiv:2610.10139v1](#)
3. **Constructing genus 2 curves with given refined Humbert invariants**, (preprint), [arXiv:2602.14319](#), [code](#)
4. **The Refined Humbert Invariant for an automorphism Group of a Genus 2 Curve**, *AGCCT, Contemp. Math.*, vol. 832, Amer. Math. Soc., Providence, RI, 2026, pp. 89–126, (published), [arXiv:2310.19076](#)
5. **The Number of Curves of Genus 2 with a Given Refined Humbert Invariant**, (preprint), with Ernst Kani, [arXiv:2608.24122](#)
6. **The classification of the refined Humbert invariant for curves of genus 2**, *Int. J. Number Theory*, vol. 21, no. 6, 2025, pp. 1247–1279., (published), [arXiv:2211.04396](#)

Academic Employment: Teaching

Queen's University, Kingston

- Fall, 2023 **MATH/MTHE 225 Ordinary Differential Equations**, *Instructor/Coordinator*
- Summer, 2022 **MATH/MTHE 225 Ordinary Differential Equations**, *Instructor/Coordinator*
- Fall, 2022 **MATH 221 Vector Calculus**, *Instructor*

Fall, 2021 **MATH/MTHE 225 Ordinary Differential Equations**, *Teaching Assistant*
[Gebze Technical University, Kocaeli](#)

Fall, 2018 **MATH 102 Calculus II**, *Teaching Assistant*

Winter, 2018 **MATH 112 Analysis II**, *Teaching Assistant*

Supervision and Mentoring

July-Sep. **Directed Reading Program Turkey**, *Mentor*, Student: Deniz Şuözer, title: The Inverse Galois
2022 Problem, [video](#), [report](#)

July-Sep. **Directed Reading Program Turkey**, *Mentor*, Student: Sadık Kuzu, title: Genus Class Number
2021 One Problem, [video](#), [slides](#)

Fellowships & Awards

2017 – 2018 **TUBITAK 1001** Structures and Representations of Leavitt Path Algebras, *Researcher*

2014 – 2016 **TUBITAK 2205** TUBITAK Scholarship for Undergraduate Students

2012 – 2016 Sabanci Foundation Success Scholarships

Talks

Conference, Workshop and Invited Talks

August 24-28 **The Agatha Crypt workshop**, *France*, Invited Speaker
2026

July 14-15 **Computational Number Theory Workshop at FoCM 2026**, *Austria*, Invited Speaker
2026

July 6-10 **Seventeenth Algorithmic Number Theory Symposium ANTS XVII**, *Netherlands*, Lightning
2026 Talk

9-10 May **Eurocrypt 2026, affiliated events**, *Italy*, Attendee
2026

5-8 May 2026 **MaGIC 2026 Workshop: Workshop on Group Actions in Cryptography**, *Italy*, Attendee

31 March **Isogeny Club, Season 8**, *Virtual*, Invited Speaker
2026

Jan. 12-16 **Melodia Workshop at Laval, France**, *Speaker*
2026

Sep. 10-12 **Leuven Isogeny Days 6**, *Belgium*, Invited Speaker
2025

Aug. 3-8 **Banff Workshop: Isogeny Graphs in Cryptography**, *Alberta*, Attendee
2025

3-8 May 2025 **Eurocrypt 2025**, *Spain*, Open problem proposed

28-30 April **The SQLparty, a workshop on isogeny-crypto**, *Spain*, Contributed Speaker
2025

30 March-4 **Journées Codage et Cryptographie (C2) 2025**, *France*, Attendee
April 2025

July 31-Aug **Number Theory and Combinatorics in Duluth, GallianFest**, *Minnesota*, Contributed Speaker
4, 2023

June 5-9, **Arithmetic, Geometry, Cryptography and Coding Theory at Luminy**, *France*, Contributed
2023 Speaker

May 30-June 2, **An Expedition into Arithmetic Geometry at Lorentz Center**, *Netherlands*, Attendee
2023

- Apr. 1-2, **Eleventh Annual Upstate NY Number Theory Conference at University of Rochester**,
2023 *New York*, Contributed Speaker
- Oct. 15-16, **Québec-Maine Number Theory Conference at Laval University**, *Quebec*, Contributed
2022 Speaker
- June 6-17, **CIMPA-Summer School on Applied Arithmetic at Nesin Mathematics Village**, *Turkey*,
2022 Attendee
- 24 May-28 **Curves over Finite Fields Past, Present and Future**, Attendee (Virtual)
May, 2021
- July 1-5, 2019 **Journées Arithmétiques XXXI**, *Istanbul University*, *Turkey*, Attendee
- 16-20 May, **Antalya Algebra Days XX**, *Mathematics Village*, *Turkey*, Attendee
2018
- 2017-2018 **Istanbul Center for Mathematical Sciences**, *Ankara-Istanbul Algebraic Geometry and Number
Theory Meetings*, *Turkey*, Attendee
- 29 May-9 **Mathematics Village**, *CIMPA-ICTP on Artin L-functions, Artin's primitive roots conj. and appls.*,
June 2017 *Turkey*, Attendee
- 30 Oct.-3 **International Autumn School on Computational Number Theory**, *Izmir Institute of Tech-*
Nov. 2017 *nology*, *Turkey*, Attendee
- [Seminar and Colloquium](#)
- June 2026 **Arithmetic Geometry and Number Theory Seminars**, *Bilkent University*, *Turkey*, Invited
Speaker
- January 2026 **Heilbronn Number Theory Seminars**, *University of Bristol*, *UK*, Invited Speaker
- January 2026 **Cryptography Seminars, Computer Science**, *University of Bristol*, *UK*, Invited Speaker
- December **Séminaire d'arithmétique à Lyon**, *ENS de Lyon*, *France*, Speaker
2024
- November **Séminaire d'arithmétique à Lyon**, *ENS de Lyon*, *France*, Speaker
2024
- Dec., 2023 **Ottawa/Carleton Number Theory Seminars**, *University of Ottawa*, *Canada*, Invited Speaker
- August 2023 **Queen's University, Number Theory Seminars**, *Canada*, Speaker
- March 2022 **Queen's University, Number Theory Seminars**, *Canada*, Speaker
- November **Queen's University, Number Theory Seminars**, *Canada*, Speaker
2021
- July 2019 **Gebze Technical University Colloquium**, *Turkey*, Speaker
- [Outreach & Service](#)
- 2016 **Hypatia Mathematics Olympiad for High School Students**, *Turkey*, *Organizator*, [website](#)
- 2016 **Imaginary Open Mathematics Exhibition**, *Turkey*, *Organizator*, [website](#)
- 4 - 8 June, **Istanbul Center for Mathematical Sciences**, *Summer School on Effective Geometry and*
2018 *Arithmetic of Curves*, *Turkey*, Assistant

Service and Professional Experience

- Refereeing: Manuscripta Mathematica (Reviewer), Designs, Codes and Cryptography (Reviewer), CRYPTO (Sub-reviewer), Eurocrypt (Sub-reviewer).
- Reviewer: Math. Reviews (MathSciNet).

Computer skills

Working: Python, SageMath, Maple

References

Ernst Kani

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Mathematics and Statistics*
Queen's University
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Pınar Kılıçer

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Teaching references

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