

Qirui Li

Department of Mathematics, Pohang University of Science and Technology
77 Cheongam-Ro, Nam-Gu, Pohang, Gyeongbuk 37673, Korea

qiruili@postech.ac.kr · qirui.li · [ORCID 0000-0002-6042-1291](https://orcid.org/0000-0002-6042-1291)

RESEARCH INTERESTS

Number theory and arithmetic geometry: automorphic representations and relative trace formulae, the linear arithmetic fundamental lemma, elliptic curves and p -divisible groups, and the geometry of Lubin–Tate, Rapoport–Zink and Shimura varieties.

EMPLOYMENT

Pohang University of Science and Technology , Korea Assistant Professor, Department of Mathematics	2023 – present
University of Bonn , Germany Postdoctoral Fellow, Mathematics. Mentor: Peter Scholze	2021 – 2023
University of Toronto , Canada Postdoctoral Fellow, Mathematics. Mentor: Stephen Kudla	2018 – 2021

EDUCATION

Columbia University , United States Ph.D. in Mathematics. Advisor: Wei Zhang	2013 – 2018
Tsinghua University , China B.S. in Mathematics	2009 – 2013

PUBLICATIONS AND PREPRINTS

1. **Arithmetic transfer for inner forms of GL_{2n}** , with Andreas Mihatsch.
Forum of Mathematics, Sigma **13** (2025), e128. [doi:10.1017/fms.2025.10034](https://doi.org/10.1017/fms.2025.10034). [arXiv:2307.11716](https://arxiv.org/abs/2307.11716).
2. **On the linear AFL: the non-basic case**, with Andreas Mihatsch.
Compositio Mathematica **161** (2025), no. 2, 385–425. [doi:10.1112/S0010437X24007577](https://doi.org/10.1112/S0010437X24007577).
[arXiv:2208.10144](https://arxiv.org/abs/2208.10144).
3. **Intersections in Lubin–Tate space and bi-quadratic fundamental lemmas**, with Ben Howard.
American Journal of Mathematics (2025). [doi:10.1353/ajm.2025.a961344](https://doi.org/10.1353/ajm.2025.a961344). [arXiv:2010.07365](https://arxiv.org/abs/2010.07365).
4. **A computational proof of the biquadratic linear AFL for GL_4** .
Preprint (2025). [arXiv:2505.22625](https://arxiv.org/abs/2505.22625).
5. **An intersection formula of CM cycles on Lubin–Tate spaces**.
Duke Mathematical Journal **171** (2022), no. 9, 1923–2011. [doi:10.1215/00127094-2021-0062](https://doi.org/10.1215/00127094-2021-0062). [arXiv:1803.07553](https://arxiv.org/abs/1803.07553).
6. **A proof of the linear arithmetic fundamental lemma for GL_4** .
Canadian Journal of Mathematics **74** (2022), no. 2, 381–427. [doi:10.4153/S0008414X20000814](https://doi.org/10.4153/S0008414X20000814).
[arXiv:1907.00090](https://arxiv.org/abs/1907.00090).
7. **Extensions of vector bundles on the Fargues–Fontaine curve**.

Journal of the Institute of Mathematics of Jussieu **21** (2022), no. 2, 487–532. doi:[10.1017/S1474748020000000](https://doi.org/10.1017/S1474748020000000).
arXiv:[1705.00710](https://arxiv.org/abs/1705.00710).

8. **On Keating’s results of formal module endomorphisms lifting.**
Preprint (2019). arXiv:[1902.10789](https://arxiv.org/abs/1902.10789).

OTHER RESEARCH

1. **Refusal lives downstream of persona in chat models**, with Viola Zhong.
ICML 2026 Mechanistic Interpretability Workshop. arXiv:[2606.26161](https://arxiv.org/abs/2606.26161).

HONORS

The 5th New World Mathematics Gold Award for Thesis	2019
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TEACHING

All courses taught in English.

Applied Linear Algebra (MATH203), POSTECH	Spring 2026
Algebra II (MAT502), POSTECH	Fall 2025
Algebra I (MAT501), POSTECH	Spring 2025
Algebraic Number Theory (MAT505), POSTECH	Fall 2024
Elliptic Curves (MAT601), POSTECH	Spring 2024
Linear Algebra (MAT203), POSTECH	Fall 2023
Linear Algebra (MAT224), University of Toronto	Summer 2021
Linear Algebra (MAT224), University of Toronto	Winter 2021
Calculus (MAT135), University of Toronto	Fall 2020
Linear Algebra (MAT224), University of Toronto	Summer 2020
Linear Algebra (MAT224), University of Toronto	Winter 2020
Calculus (MAT135), University of Toronto	Fall 2019
Linear Algebra (MAT224), University of Toronto	Summer 2019
Differential Equations (MAT234), University of Toronto	Spring 2019
Linear Algebra (MAT223), University of Toronto	Fall 2018
Linear Algebra (MATHS2010), Columbia University	Summer 2017
College Algebra (MATH1003), Columbia University	Spring 2017
Linear Algebra (MATHS2010), Columbia University	Summer 2016
Linear Algebra (MATHS2010), Columbia University	Summer 2015

TEACHING SOFTWARE

Honeymath Platform — interactive problem sets with instant feedback and automatic grading. honeymath.com

Row Operation Calculator — an interactive matrix calculator that waits for the student’s action rather than printing the answer. honeymath.github.io/MatrixCalculator

Matrix Cross Filler — rank-one decomposition with finger-only input; LU and Cholesky by hand. honeymath.github.io/crossfiller

Linear Algebra Slides — course slides built on projection matrices and Lagrange interpolation. github.com/honeymath/Linear-Algebra-Slides