Asuka Shiga

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Education

2024–present Ph.D. Program in Mathematics, Tohoku University. Advisor: Professor Nobuo Tsuzuki. Expected completion: March 2027.

2022–2024 M.Sc. in Mathematics, Tohoku University. Thesis: "Behavior of the Tate–Shafarevich groups of elliptic curves under field extensions."

2018–2022 B.Sc. in Mathematics, Kobe University. Advisor: Professor Kentaro Mitsui.

Publications

Asuka Shiga, "*When the BSD Real Period Remembers Elliptic Curves over* $\mathbb{Q}$," Preprint; arXiv:2610.06015, v1. (arXiv)

Asuka Shiga, "*Nontrivial torsion in the Tate–Shafarevich group of elliptic curves via visibility and twists*," Preprint; arXiv:2602.19861, v2. (arXiv)

Asuka Shiga, "*Infinitely many pairs of non-isomorphic elliptic curves sharing the same BSD invariants*," Revised manuscript under review at *Research in Number Theory*; arXiv:2507.18574, v3. (arXiv)

Asuka Shiga, "*Behaviors of the Tate–Shafarevich Group of Elliptic Curves under Quadratic Field Extensions*," *Tokyo Journal of Mathematics* 49 (2026), no. 1, 199–224.

Talks and Posters

Nov. 2026 Invited talk (forthcoming), Arithmetic Geometry in Sendai, Tohoku University: "BSD twins and arithmetic invariants of elliptic curves."

Sep. 13-18, 2026 Poster presentation, L-functions and Motives in Niseko 2026, Niseko, Hokkaido, Japan: "Abundance and rarity of BSD twins of elliptic curves."

Sep. 2-4, 2026 Contributed talk, Young Researchers in Algebraic Number Theory (Y-RANT VIII), University of Bristol, Bristol, United Kingdom: "On the Abundance and Rarity of BSD Twins of Elliptic Curves."

Aug. 24-28, 2026 Poster presentation, Arithmetic Statistics, Paderborn University, Paderborn, Germany: "Abundance and rarity of BSD twins of elliptic curves."

Mar. 2026 Invited talk, Research on Calabi–Yau Manifolds, Nagoya University: "Infinitely many pairs of non-isomorphic elliptic curves sharing the same BSD invariants and visibility for Tate–Shafarevich groups."

Jan. 2026 Invited talk, Number Theory Joint Seminar, Kyoto University: "Infinitely many pairs of non-isomorphic elliptic curves sharing the same BSD invariants and visibility for Tate–Shafarevich groups."

Dec. 2025 Invited talk, Mini-workshop on Arithmetic Geometry in Sendai, Tohoku University: "Infinitely many pairs of non-isomorphic elliptic curves sharing the same BSD invariants and the visibility theorem."

Sep. 2025 Invited talk, Ishigaki Algebraic Geometry Workshop: "BSD invariants shared by infinitely many pairs of non-isomorphic elliptic curves."

Sep. 2025 Contributed talk, Y-RANT: Young Researchers in Number Theory, University of Nottingham: “Infinitely many pairs of non-isomorphic elliptic curves sharing the same BSD invariants.”

Mar. 2025 Contributed talk, Annual Meeting of the Mathematical Society of Japan, Waseda University: “On the behavior of Tate–Shafarevich groups of elliptic curves under quadratic extensions.”

Nov. 2024 Invited talk, Tsuda University Number Theory Workshop 2024: “The relation between quadratic extensions and twists for Tate–Shafarevich groups.”

Research Experience

Aug.–Sep. 2024 Summer Intern, NTT Research Institute for Fundamental Mathematics. Computational research on rational points on curves, Mordell–Weil ranks of elliptic curves without rational torsion, and Tate–Shafarevich groups.

Teaching

Spring 2024 Teaching Assistant, Introduction to Algebra A, Tohoku University (exercise sessions, grading, and student support).

Spring 2023 Teaching Assistant, Linear Algebra A, Tohoku University (grading and student support).

Service

July 2025 Organized and chaired the Tohoku Number Theory Seminar talk by Alexandros Konstantinou, “The order of the Tate–Shafarevich group modulo squares.”

Honors and Awards

2024 Kawai Encouragement Award for an outstanding master’s thesis, Department of Mathematics, Tohoku University.

Fellowships and Research Support

2024–present JST SPRING / Tohoku University Doctoral Student Support (JPMJSP2114).

2026 FY2026 International Conference Travel Expenses Support.

Languages

Japanese (native); English (research writing, presentations, and mathematical discussion).

Last updated: October 19, 2026