

Lực Đình-Khuông Ta

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EDUCATION

University of Pittsburgh

Mathematics Ph.D. student, Kenneth P. Dietrich School of Arts and Sciences

Pittsburgh, PA

Aug 2025 – present

- **Selected coursework:** Lie Theory: Algebraic Groups (in progress), Introduction to Langlands (in progress)

Yale University

B.A. Mathematics (intensive track) & Ethnicity, Race, and Migration; GPA: 3.82

New Haven, CT

Aug 2021 – May 2025

- **Graduate coursework:** Representation Theory (grade: A), Flavors of Hyperbolicity in Geometric Group Theory (grade: A), Commutative Algebra and Category Theory (grade: A), Algebraic Topology (grade: B), Quantum Invariants of Knots and 3-Manifolds (grade: A)
- **Bachelor's thesis:** Available on arXiv [6]; advised by Sam Raskin; awarded grade A

Budapest Semesters in Mathematics

Study abroad; GPA: 4.0

Budapest, Hungary

Jun 2023 – Aug 2023

RESEARCH EXPERIENCE

REU: Research Challenges of Computational Methods in Discrete Mathematics

Moravian University, Department of Mathematics

Bethlehem, PA

May 2024 – Jul 2024

- **Supervisors:** Samantha Pezzimenti (Penn State Brandywine) and Wing Hong Tony Wong (Kutztown University)
- Conducted [7, 8] using methods from topology, knot theory, algebra, and combinatorics and Python algorithms

PUBLICATIONS

SUBMITTED PREPRINTS

- [1] *Groups versus quandle-like invariants of 3-manifolds.* [arXiv:2509.24098](#), 2025. 11 pages.
- [2] *Good involutions of twisted conjugation subquandles and Alexander quandles.* [arXiv:2508.16772](#), 2025. 18 pages.
- [3] *Good involutions of conjugation subquandles.* [arXiv:2505.08090](#), 2025. 32 pages.
- [4] *Enumeration of virtual quandles up to isomorphism.* [arXiv:2506.16536](#), 2025. 11 pages.
- [5] *Graph quandles: Generalized Cayley graphs of racks and right quasigroups.* [arXiv:2506.04437](#), 2025. 19 pages.
- [6] *Classification and structure of generalized Legendrian racks.* [arXiv:2504.12671](#), 2025. Bachelor's thesis, 29 pages.
- [7] *Constructions of and bounds on the toric mosaic number*, with Kendall Heiney, Margaret Kipe, Samantha Pezzimenti, and Kaelyn Pontes. [arXiv:2504.02265](#), 2025. 21 pages.

PEER-REVIEWED ARTICLES

- [8] *Bounds on the mosaic number of Legendrian knots*, with Margaret Kipe, Samantha Pezzimenti, Leif Schaumann, and Tony W. H. Wong. *J. Knot Theory Ramifications* **34** (2025), no. 12, Paper No. 2550055, [doi:10.1142/S0218216525500555](#). 52 pages. (Preprint available on [arXiv](#).)

EDITOR-REVIEWED PUBLICATIONS

- [10] Integer sequences [A383144–A383146](#), [A383828–A383831](#), [A385040–A385041](#), [A386231–A386234](#), and [A387317](#) related to various topics in group theory and nonassociative algebra (see [2–6]) and [A375353–A375357](#), [A375392](#), [A375619](#), and [A376155](#) related to combinatorics. *On-Line Encyclopedia of Integer Sequences (OEIS)*, 2025.
- [11] Integer sequences [A374939](#), [A374942–A374947](#), and [A375354](#) related to Legendrian knot mosaics (see [8]), with Margaret Kipe, Samantha Pezzimenti, Leif Schaumann, and Wing Hong Tony Wong. *On-Line Encyclopedia of Integer Sequences (OEIS)*, 2024.

PRESENTATIONS

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| Legendrian Knots and Rack-Theoretic Coloring Invariants SIAM Conference PD25, Contributed Presentation Session 9 | Pittsburgh, PA Apr 2025 |
| From Groups to Nonassociative Knot Invariants Graduate Student Seminar University of Pittsburgh | Pittsburgh, PA Sep 2025 |
| Why Knot? Algebraic Coloring Invariants of Legendrian Knots Mellon Forum (general audience), Grace Hopper College, Yale University | New Haven, CT Apr 2025 |
| Generalized Legendrian Racks: Knot Coloring Invariants & Algebraic Classification Hudson River Undergraduate Mathematics Conference, Union College | Schenectady, NY Apr 2025 |
| Computing the Mosaic Numbers of Legendrian Knots Joint Mathematical Meetings, Spectra Special Session on Research by LGBTQ+ Mathematicians | Seattle, WA Jan 2025 |
| Thrown for a Loop: A Survey of Knot Theory (half expository, half research talk) Pizza Seminar Series, Yale Undergraduate Mathematics Society, Yale University | New Haven, CT Sep 2024 |
| Toric Knot Mosaics (with Kendall Heiney) UnKnot V Conference, Seattle University, Department of Mathematics | Seattle, WA Jul 2024 |
| Legendrian Knot Mosaics (with Margaret Kipe and Leif Schaumann) REU Symposium, Gettysburg College, Department of Mathematics | Gettysburg, PA Jun 2024 |

TEACHING

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| Lie Groups, Lie Algebras, and Representation Theory Mentor, Directed Reading Program | University of Pittsburgh Sep 2025 – present |
| <ul style="list-style-type: none">– Hold weekly one-on-one meetings to mentor an undergraduate student studying Lie theory, culminating in an end-of-term project and colloquium presentation– Developed an original syllabus using <i>Lie Groups, Lie Algebras, and Representations</i> by Brian Hall | |
| Preparation for Scientific Calculus Substitute Teaching Assistant | University of Pittsburgh Sep 2025 |
| <ul style="list-style-type: none">– Led semiweekly practice sessions and administered exams for 30 precalculus students | |
| Fields and Galois Theory Undergraduate Learning Assistant | Yale University Jan 2025 – May 2025 |
| <ul style="list-style-type: none">– Served as one of two TAs for 22 students; held regular office hours, small group tutoring sessions, and review sessions; wrote original exam review materials; held regular one-on-one tutoring sessions; graded assignments | |
| Introduction to Abstract Algebra Undergraduate Learning Assistant | Yale University Aug 2024 – Dec 2024 |
| <ul style="list-style-type: none">– Created and distributed original exam review materials; design and conduct interactive exam review sessions; held regular office hours for 41 students | |

Analysis II: Lebesgue Integration and Complex Fourier Series Yale University
Undergraduate Learning Assistant Jan 2024 – May 2024

- Created and distributed original exam review materials; designed and conducted multiple interactive exam review sessions and collected student feedback throughout the term; held regular office hours
- Served as the only on-campus ULA for all 40 students; wrote and provided solution sets to assist the off-campus ULA

Real Analysis Yale University
Undergraduate Learning Assistant Aug 2023 – Dec 2023

- Designed and led weekly proof-writing workshops to introduce 44 students to set-theoretic concepts, proof techniques, and mathematical writing; conducted interactive midterm and final exam review sessions; held regular office hours

Introduction to Functions and Calculus I-II Yale University
Undergraduate Learning Assistant and Peer Tutor Aug 2022 – May 2023

- Designed and led semiweekly interactive practice workshops; organized and conducted weekly small-group review sessions; created original practice problems for all 88 students and solution sets for other ULA's to consult during workshops

EMPLOYMENT

Web Developer New Haven, CT
Yale University Bands Aug 2023 – present

- Applied HTML, CSS, and JavaScript to oversee web development for Yale's concert, jazz, and marching bands

Undergraduate Learning Assistant New Haven, CT
Yale University, Department of Mathematics Aug 2022 – May 2025

- Hired after a highly selective interview and teaching evaluation process with mathematics faculty
- For further information, please refer to the "Teaching" section above.

Mathematics Tutor New Haven, CT and remote
Self-employed Aug 2021 – present

- Work one-on-one with students of all ages to develop and reinforce mathematical confidence, review material for courses and standardized testing, and nurture mathematical curiosity by exploring connections to higher mathematics

Event Assistant New Haven, CT
"Crossroads of Algebra, Geometry, and Physics" Conference at Yale University May 2022

- Worked alongside mathematics faculty and staff to facilitate and usher for a Yale mathematics conference
- Took advantage of the opportunity to attend presentations and explore algebraic geometry as a future research interest

ADDITIONAL ACADEMIC EXPERIENCE

Independent Study of Lie Theory and Representation Theory New Haven, CT
Yale University, Department of Mathematics Jan 2023 – May 2023

- **Advisor:** Andrew Neitzke

Directed Project on Commutative Algebra Remote
Polymath, Jr. Undergraduate Research Program Jun 2022 – Aug 2022

- **Advisor:** Ananthnarayan Hariharan (Indian Institute of Technology, Bombay)

Science, Technology, and Research Scholars (STARS) Program New Haven, CT
Yale University, Science and Quantitative Reasoning Center Aug 2021 – May 2022

SERVICE

Co-Secretary, Graduate Student Organization Pittsburgh, PA
University of Pittsburgh, Department of Mathematics Sep 2025 – present

- Elected to take notes at meetings, share meeting minutes with the department, and maintain student resources for graduate students

Session Chair
SIAM Conference PD25

Pittsburgh, PA
Nov 2025

- Selected to serve as chair for [Contributed Presentation Session 9](#)

Delegate, Student Advisory Committee
Yale University, Department of Mathematics

New Haven, CT
Feb 2024 – Apr 2025

- Elected by students across mathematics-related majors to bridge the gap between students and faculty
- Advocated in particular for the needs of first-generation and marginalized students at biweekly meetings

Undergraduate Peer Mentor
Yale Undergraduate Mathematics Society

New Haven, CT
Aug 2023 – Apr 2025

- Mentor first-year students interested in studying mathematics, especially other first-generation students
- Engage with Yale's broader mathematics community through various events, seminars, and presentations

Mathematics Advisor, Academic Fair
Yale University, Department of Mathematics

New Haven, CT
Aug 2023, Aug 2024, Apr 2025

- Introduced incoming students to Yale's mathematics department, answering questions about courses and the major

Cofounder and Vice Chair
Yale Students for Ranked-Choice Voting

New Haven, CT
Aug 2022 – May 2025

- Mentored students interested in statistical and combinatorial research on ranked-choice voting in New Haven

WORKSHOPS

Mathematics REU Panel (Invited panelist)
Yale Undergraduate Mathematics Society, Yale University

New Haven, CT
Jan 2024

Departmental Town Halls (Organized and led)
Yale University, Department of Mathematics

New Haven, CT
Apr 2024 and Dec 2024

- Held discussions at two session open for all students to provide feedback for the department, especially regarding its climate and potential structural reforms
- Compiled a report of students' experiences and critiques to share with the Dean of Undergraduate Studies in Mathematics

Mathematics Career Panel (Organized and led)
Yale University, Department of Mathematics

New Haven, CT
Nov 2024

Mathematics Graduate School Panel (Organized)
Yale University, Department of Mathematics

New Haven, CT
Apr 2024

Mathematics Course Scheduling and Major Planning Workshop (Organized and hosted)
Yale University, Department of Mathematics

New Haven, CT
Apr 2024

HONORS & GRANTS

SREB-State Doctoral Scholar
Southern Regional Education Board

Sep 2025

K. Leroy Irvis Fellowship (\$36,558)
University of Pittsburgh, Office of the Provost

Aug 2025

Prospective Ph.D. Preview Program Scholar (6% acceptance rate)
Princeton University, Graduate School Deans and Administration

Aug 2024

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| Delta Alpha Pi Honor Society (Founding member of Yale chapter) Yale University | Jan 2023 – May 2025 |
| Richter Summer Fellowship (\$1,500) Paul K. Richter and Evalyn E. Cook Richter Memorial Fund | Jun 2023 |
| International Study Award (\$3,400) Yale University | Jun 2023 |
| Summer Experience Award (\$4,000) Yale University | May 2022 |
| Winston T. Townsend Prize for Excellence in English Composition (\$1,000) Yale University, Department of English | May 2022 |

PROFESSIONAL MEMBERSHIPS & AFFILIATIONS

- American Mathematical Society (AMS)
- Center for Minorities in the Mathematical Sciences (CMMS)
- Out in Science, Technology, Engineering, and Mathematics (oSTEM)
- Sines of Disability
- Spectra, the Association for LGBTQ+ Mathematicians

SKILLS

- **Programming languages:** Python, Java, R, HTML, CSS, JavaScript, Wolfram Language
- **Other software:** \LaTeX , PGF/TikZ, GAP, Mathematica, Singular, KnotPlot, Jupyter Notebook, Git, Logger Pro, Adobe Creative Cloud
- **Human languages:** American Sign Language (advanced), Spanish (intermediate), Vietnamese (conversational), Italian (reading only)