Inyoung Ryu

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Research Interests

- Surface group representations and character varieties
- Mapping class groups and Teichmüller theory
- Low-dimensional topology and geometric group theory

Education

Texas A&M University — Aug. 2021 – Present
Ph.D. in Mathematics. Expected graduation date: May 2027 — *Texas, US*

Ulsan National Institute of Science and Technology (UNIST) — Mar. 2017 – Jul. 2021
Bachelor of Science in Mathematical Sciences — *Ulsan, Korea*

- Minor in Computer Science and Engineering

Sabanci University — Feb. 2020 – Jun. 2020
Erasmus Program — *Istanbul, Turkey*

Publications and Preprints

From Bowditch's question to Goldman's conjecture for type-preserving representations — Sep. 2026
with Viraj Joshi, submitted, arXiv: 2609.02065

On totally hyperbolic non-Fuchsian type-preserving representations — Nov. 2025
Submitted, arXiv: 2511.13989

Connected components of the space of type-preserving representations — Jul. 2025
with Tian Yang, submitted, arXiv: 2507.07391

Invited Seminars and Colloquium Talks

(Upcoming) Two invariants of type-preserving representations and applications — Jan. 2027
Joint Mathematics Meetings (JMM 2027) — *Illinois, US*

(Upcoming) Two invariants of type-preserving representations and applications — Dec. 2026
Geometry & Topology seminar, Yale University — *Connecticut, US*

(Upcoming) Two invariants of type-preserving representations and applications — Nov. 2026
Geometric Group Theory Seminar, Purdue University — *Indiana, US*

(Upcoming) Two invariants of type-preserving representations and applications — Nov. 2026
RTG Seminar on Geometry, Dynamics and Topology, University of Michigan — *Michigan, US*

Two invariants of type-preserving representations and applications — Sep. 2026
Geometry and Dynamics Seminar, Centro de Ciencias Matemáticas UNAM (Online) — *Morelia, Mexico*

Two invariants of type-preserving representations and applications — Apr. 2026
Topology Seminar, University of Tennessee — *Tennessee, US*

Two invariants of type-preserving representations and applications — Apr. 2026
Topology & Geometry Seminar, Rutgers University — *New Jersey, US*

Two invariants of type-preserving representations and applications — Mar. 2026
Algebra & Combinatorics Seminar, Texas A&M University — *Texas, US*

Two invariants of type-preserving representations and applications — Mar. 2026
Groups & Dynamics Seminar, University of Texas Austin — *Texas, US*

Two invariants of type-preserving representations and applications — Feb. 2026
Groups & Dynamics Seminar, Texas A&M University — *Texas, US*

Connected components of the space of type-preserving representations — Nov. 2025
SHSU Junior Colloquium, Sam Houston State University — *Texas, US*

Connected components of the space of type-preserving representations Feb. 2025
KIAS HCMC Topology Seminar, Korea Institute for Advanced Study (Online) *Seoul, Korea*

Geometric approach to surface group representations Sep. 2024
Graduate Student Organization Seminar, Texas A&M University *Texas, US*

Topological components of spaces of representations Aug. 2024
SNU Topology Seminar, Seoul National University (Online) *Seoul, Korea*

Mapping class group action on Teichmüller Space Apr. 2024
Graduate Student Organization Seminar, Texas A&M University *Texas, US*

Contributed Talks

(Upcoming) Existence of non-Fuchsian totally hyperbolic representations Nov. 2026
AMS 2026 Fall Western Sectional Meeting, Arizona State University *Arizona, US*

Existence of non-Fuchsian totally hyperbolic representations Oct. 2026
AMS 2026 Fall Central Sectional Meeting, University of Minnesota Duluth *Minnesota, US*

Connected components of the space of type-preserving representations May 2025
GTA: Philadelphia 2025, Temple University *Pennsylvania, US*

Connected components of the space of type-preserving representations Apr. 2025
CIRM School on Geometric structures and discrete group actions *Marseille, France*

Connected components of the space of type-preserving representations Apr. 2025
Graduate Student Conference in Topology and Geometry, Indiana University Bloomington *Indiana, US*

Nielsen-Thurston classification Apr. 2024
GIGEM Conference, Texas A&M University *Texas, US*

Lightning Talks and Poster Presentations

Can a non-Fuchsian representation be totally hyperbolic? Jul. 2026
Vanderbilt colloquium series: Groups, geometry, and dynamics (ICM satellite conference) *Tennessee, US*

Poster Presentation: Non-Fuchsian totally hyperbolic representations Jun. 2026
Young Geometric Group Theory XIV *Seoul, Korea*

Connected components of the space of type-preserving representations Sep. 2025
Ventotene Workshop on Higher-dimensional hyperbolic geometry *Ventotene, Italy*

Connected components of the space of type-preserving representations Jun. 2025
2K-GATE Workshop, Korea Institute for Advanced Study *Seoul, Korea*

Connected components of the space of type-preserving representations May 2025
53rd Barrett Lectures: Recent Development in Geometric Group Theory *Tennessee, US*

Connected components of the space of type-preserving representations Jan. 2025
Conference on Geometry and Dynamics in Low Dimensions, IMVAST *Hanoi, Vietnam*

Selected Conferences and Workshops

International Congress of Mathematicians (ICM 2026) Jul. 2026
Pennsylvania, US

Joint Mathematics Meetings (JMM 2026) Jan. 2026
Washington, D.C., US

Workshop on Homogeneous Dynamics and Anosov Representations Apr. 2026
Simons Laufer Mathematical Sciences Institute *California, US*

SLMath Summer School: Geometry and Dynamics in Higher Rank Lie Groups Jul. 2025
University of California, Berkeley *California, US*

Workshop on Low-dimensional phenomena: geometry and dynamics Jun. 2025
Institut Henri Poincaré *Paris, France*

Workshop on Lorentzian, Affine, and Hyperbolic Differential Geometry Apr. 2025
University of Maryland *Maryland, US*

Workshop on Motives and Mapping Class Groups Jan. 2025
American Institute of Mathematics, Caltech *California, US*

Joint Mathematics Meetings (JMM 2024) Jan. 2024
California, US

Conference on Characters and Moduli of Surfaces Jul. 2023
Kyoto University *Kyoto, Japan*

Honors, Awards, and Grants

Guseman Prize Oct. 2026
Texas A&M University; awarded by the Graduate Committee for excellence in research *Texas, US*

AMS Fall 2026 Sectional Meeting Travel Grant Sep. 2026
American Mathematical Society *Texas, US*

Graduate Research Assistant, supported by NSF Grant, PI: Tian Yang Sep. 2026 – Dec. 2026
Texas A&M University *Texas, US*

Graduate Research Assistant, supported by NSF Grant, PI: Tian Yang Jul. 2024 – Dec. 2024
Texas A&M University *Texas, US*

Houston A&M Mothers' Club Outstanding TA Award Jul. 2024
Awarded for outstanding performance as a teaching assistant *Texas, US*

Graduate Research Assistant, supported by NSF Grant, PI: Tian Yang Jan. 2024 – May 2024
Texas A&M University *Texas, US*

Teaching

Python Lab Assistant, MATH 151 & 152 (Engineering Mathematics I & II) Jul. 2026
Texas A&M University. Creating Python lab assignments. *Texas, US*

Instructor of Record, MATH 142 (Business Calculus) Jan. 2026 – May 2026
Texas A&M University. Lecturing, holding office hours. Writing, proctoring, and grading exams. *Texas, US*

Grader, MATH 636 (Topology I) Sep. 2025 – Dec. 2025
Texas A&M University *Texas, US*

Python Lab Assistant, MATH 150 (Functions, Trigonometry and Linear Systems) Jul. 2025
Texas A&M University. Creating Python lab assignments. *Texas, US*

Grader, MATH 467 (Modern Geometry) Jan. 2025 – May 2025
Texas A&M University *Texas, US*

Help Session Tutor, MATH 142 (Business Calculus) Jun. 2024
Texas A&M University *Texas, US*

Grader, MATH 636 (Topology I) Aug. 2023 – Dec. 2023
Texas A&M University *Texas, US*

Grader, MATH 142 (Business Calculus) Jul. 2023
Texas A&M University *Texas, US*

Python Lab Assistant, MATH 151 (Engineering Mathematics I) Jun. 2023
Texas A&M University. Creating Python lab assignments. *Texas, US*

Teaching Assistant, MATH 152 (Engineering Mathematics II) Jan. 2023 – May 2023
Texas A&M University. Leading recitations. *Texas, US*

Teaching Assistant, MATH 151 (Engineering Mathematics I) Aug. 2022 – Dec. 2022
Texas A&M University. Leading recitations. *Texas, US*

Grader, MATH 304 (Linear Algebra) Jun. 2022
Texas A&M University *Texas, US*

Grader, MATH 423 (Linear Algebra II) Jan. 2022 – May 2022
Texas A&M University *Texas, US*

Grader, MATH 467 (Modern Geometry) Aug. 2021 – Dec. 2021
Texas A&M University *Texas, US*

Teaching Assistant (Calculus I, Calculus II) Mar. 2018 – Dec. 2019
Ulsan National Institute of Science and Technology. Assistant in discussion sessions *Ulsan, Korea*

Calculus I Open Lecture Jun. 2018
Ulsan National Institute of Science and Technology *Ulsan, Korea*

Mentoring

Directed Reading Program: A first course in Algebraic Topology Sep. 2025 – Dec. 2025
Texas A&M University *Texas, US*

Service

Treasurer, Association for Women in Mathematics Aug. 2022 – May 2023
Texas A&M University *Texas, US*

- Women in Math Mentoring Lunch
- AWM Peer Mentoring Program

Teaching Assistant for Math Circle Nov. 2023
Texas A&M Math Circle *Texas, US*

Grader for High School Math Contest Nov. 2023
Texas A&M High School Mathematics Contest *Texas, US*

Grader for High School Math Contest Nov. 2022
Texas A&M High School Mathematics Contest *Texas, US*