

# Inyoung Ryu

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## RESEARCH INTERESTS

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- Surface group representations, Character variety
- Mapping Class Groups and Teichmüller space, Teichmüller Theory
- Low-dimensional Topology, Geometric Group Theory

## EDUCATION

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### Texas A&M University

*Ph.D. in Mathematics*

Aug.2021 – Present

*Texas, US*

### Ulsan National Institute of Science and Technology(UNIST)

*Bachelor of Science in Mathematical Science*

Mar.2017 – Jul.2021

*Ulsan, Korea*

- Minor in Computer Science and Engineering

### Sabanci University

*Erasmus Program*

Feb. 2020 – Jun. 2020

*Istanbul, Turkey*

## PUBLICATION/PREPRINTS

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### On totally hyperbolic non-Fuchsian type-preserving representations

*arXiv:2511.13989*

Nov. 2025

### Connected components of spaces of type-preserving representations

*with T. Yang, arXiv: 2502.05078*

Jul. 2025

## TALKS

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### Two invariants of type-preserving representations and applications

*Groups & Dynamics Seminar, University of Texas Austin*

Mar. 2026

*Texas, US*

### Two invariants of type-preserving representations and applications

*Groups & Dynamics Seminar, Texas A&M University*

Feb. 2026

*Texas, US*

### Connected components of the space of type-preserving representations

*SHSU Junior Colloquium*

Nov. 2025

*Texas, US*

### Connected components of the space of type-preserving representations

*Ventotene Workshop on Higher dimensional hyperbolic geometry*

Sep. 2025

*Ventotene, Italy*

### Connected components of the space of type-preserving representations

*2K-GATE Workshop, Korea Institute for Advanced Study*

Jun. 2025

*Seoul, Korea*

### Connected components of the space of type-preserving representations

*GTA: Philadelphia 2025, Temple University*

May. 2025

*Pennsylvania, US*

### Connected components of the space of type-preserving representations

*53rd Barrett Lectures: Recent Development in Geometric Group Theory, University of Tennessee*

May. 2025

*Tennessee, US*

### Connected components of the space of type-preserving representations

*CIRM School on Geometric structures and discrete group actions*

Apr. 2025

*Marseille, France*

### Connected components of the space of type-preserving representations

*Graduate Student Conference in Topology and Geometry, Indiana University Bloomington*

Apr. 2025

*Indiana, US*

### Connected components of the space of type-preserving representations

*KIAS HCMC Topology Seminar, Korea Institute for Advanced Study (Online)*

Feb. 2025

*Seoul, Korea*

### Connected components of the space of type-preserving representations

*Conference on Geometry and Dynamics in Low Dimensions, IMVAST*

Jan. 2025

*Hanoi, Vietnam*

### Geometric Approach to Surface Group Representations

*Graduate Student Organization Seminar, Texas A&M University*

Sep. 2024

*Texas, US*

### Topological Components of Spaces of Representations

*Low-dimensional Topology Seminar, Seoul National University*

Aug. 2024

*Seoul, Korea*

### Nielsen-Thurston Classification

*GIGEM Conference, Texas A&M University*

Apr. 2024

*Texas, US*

### Mapping Class Group Action on Teichmüller Space

*Graduate Student Organization Seminar, Texas A&M University*

Apr. 2024

*Texas, US*

PARTICIPATED CONFERENCES/WORKSHOPS

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<b>Joint Mathematics Meeting (JMM)</b> <i>Walter E. Washington Convention Center</i>	Jan. 2026 <i>Washington, D.C., US</i>
<b>Ventotene Workshop on Higher dimensional hyperbolic geometry</b>	Sep.2025 <i>Ventotene, Italy</i>
<b>SLMath Summer School: Geometry and Dynamics in Higher Rank Lie Groups</b> <i>University of California, Berkeley</i>	Jul.2025 <i>California, US</i>
<b>Workshop: Low-dimensional phenomena: geometry and dynamics</b> <i>Institut henri poincaré</i>	Jun.2025 <i>Paris, France</i>
<b>2K-GATE Workshop</b> <i>Korea Institute for Advanced Study</i>	Jun.2025 <i>Seoul, Korea</i>
<b>GTA: Philadelphia 2025</b> <i>Temple University</i>	May.2025 <i>Pennsylvania, US</i>
<b>53rd Barrett Lectures: Recent Development in Geometric Group Theory</b> <i>University of Tennessee</i>	May.2025 <i>Tennessee, US</i>
<b>CIRM School on Geometric structures and discrete group actions</b> <i>Centre International de Rencontres Mathématiques</i>	Apr.2025 <i>Marseille, France</i>
<b>Graduate Student Conference in Topology and Geometry</b> <i>Indiana University Bloomington</i>	Apr.2025 <i>Indiana, US</i>
<b>Workshop on Lorentzian, Affine, and Hyperbolic Differential Geometry</b> <i>Univarsity of Maryland</i>	Apr.2025 <i>Maryland, US</i>
<b>Workshop on Motives and Mapping Class Groups</b> <i>American Institute of Mathematics, Caltech</i>	Jan. 2025 <i>California, US</i>
<b>Winter School Côte d'Azur</b> <i>Université Côte d'Azur</i>	Jan. 2025 <i>Nice, France</i>
<b>Conference on Geometry and Dynamics in Low Dimensions</b> <i>Institute of Mathematics, Vietnam Academy of Science and Technology</i>	Jan. 2025 <i>Hanoi, Vietnam</i>
<b>Texas Geometry and Topology Conference</b> <i>Texas A&amp;M University</i>	Nov. 2024 <i>Texas, US</i>
<b>AMS Central Sectional Meeting</b> <i>University of Texas at San Antonio</i>	Sep. 2024 <i>Texas, US</i>
<b>Canaryfest - Moving to higher rank: from hyperbolic to Anosov</b> <i>Grand Hotel St. Michele</i>	July. 2024 <i>Cetraro, Italy</i>
<b>AlMaRe Conference</b> <i>Fourier Institute</i>	July. 2024 <i>Grenoble, France</i>
<b>Conference on Quantum Topology and Connections to Mathematical Physics</b> <i>Texas A&amp;M University</i>	May. 2024 <i>Texas, US</i>
<b>GIGEM Conference</b> <i>Texas A&amp;M University</i>	April. 2024 <i>Texas, US</i>
<b>Joint Mathematics Meeting (JMM)</b> <i>Moscone Center</i>	Jan. 2024 <i>California, US</i>
<b>Winter School on Low-dimensional Topology and Related Topics</b> <i>Institute for Basic Science</i>	Dec. 2023 <i>Pohang, Korea</i>
<b>Texas Geometry and Topology Conference.</b> <i>Rice University</i>	Nov. 2023 <i>Texas, US</i>
<b>Conference on Characters and Moduli of Surfaces</b> <i>Kyoto University</i>	Jul. 2023 <i>Kyoto, Japan</i>
<b>Summer School on Scissors Congruence, Algebraic K-Theory, and Trace Methods</b> <i>Indiana University</i>	Jun. 2023 <i>Indiana, US</i>
<b>Workshop in Geometric Topology</b> <i>Colorado College</i>	Jun. 2023 <i>Colorado, US</i>

<b>AMS Southeastern Sectional Meeting</b> <i>Georgia Institute of Technology</i>	Mar. 2023 <i>Georgia, US</i>
<b>Winter school in singularities and low-dimensional topology</b> <i>Rényi Institute</i>	Jan. 2023 <i>Budapest, Hungary</i>
<b>Graduate Student Topology and Geometry Conference</b> <i>Georgia Institute of Technology</i>	Apr. 2022 <i>Georgia, US</i>
<b>Texas Geometry and Topology Conference</b> <i>The University of Texas at Dallas</i>	Feb.2022 <i>Texas, US</i>
<b>The South Central Topology Conference</b> <i>Texas A&amp;M University</i>	Sep. 2021 <i>Texas, US</i>
<b>Arizona Winter School</b> <i>University of Arizona</i>	Jan.2021-Feb.2021 <i>Arizona, US</i>
<b>International Congress of Mathematicians(ICM)</b>	Aug. 2014 <i>Seoul, Korea</i>

#### STUDY ON OTHER INTERESTS

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<b>End-periodic maps Group study seminar</b> <i>Texas A&amp;M University</i>	Aug. 2025 – Dec. 2025 <i>Texas, US</i>
<b>Reading Course</b> <i>Texas A&amp;M University, with Tian Yang</i>	Feb. 2022 – Oct. 2023 <i>Texas, US</i>
<ul style="list-style-type: none"> <li>• Teichmüller Theory and Nielsen-Thurston Classification</li> <li>• Mapping Class Group and Teichmüller Space, Moduli Space</li> <li>• Knot Theory. Jones Polynomial and Alexander Polynomial</li> </ul>	
<b>Reading Course</b> <i>Texas A&amp;M University, with Guoliang Yu</i>	Feb. 2022 – May. 2022 <i>Texas, US</i>
<ul style="list-style-type: none"> <li>• Fredholm Operator and Higher index Theory</li> </ul>	
<b>Reading Course</b> <i>Texas A&amp;M University, with Irina Bobkova</i>	Sep. 2022 – May. 2023 <i>Texas, US</i>
<ul style="list-style-type: none"> <li>• Algebraic Topology, Stable Homotopy Theory</li> </ul>	
<b>Low dimensional Topology Seminar</b> <i>Texas A&amp;M University</i>	Feb. 2022 – May. 2023 <i>Texas, US</i>
<ul style="list-style-type: none"> <li>• Smooth 4-Manifolds and Intersection Forms</li> <li>• Teichmüller theory, Nielson-Thurston Classification</li> </ul>	
<b>Interdisciplinary Project</b> <i>UNIST</i>	Sep. 2020 – Feb. 2021 <i>Ulsan, Korea</i>
<b>Undergraduate Research Assistant</b> <i>UNIST</i>	Jul. 2019 – Aug. 2019 <i>Ulsan, Korea</i>

#### SCHOLARSHIPS/AWARDS

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<b>Houston A&amp;M Mothers' Club Outstanding TA Award</b> <i>Texas A&amp;M University</i>	Jul. 2024 <i>Texas, US</i>
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## TEACHING/MENTORING

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<b>Instructor of record, Math 142 (Business Calculus)</b> <i>Texas A&amp;M University</i>	Jan. 2026 - May. 2026 <i>Texas, US</i>
<b>Direct Reading Program - A first course in Algebraic Topology</b> <i>Texas A&amp;M University</i>	Sep. 2025 - Dec.2025 <i>Texas, US</i>
<b>Grader, MATH 636 (Topology I)</b> <i>Texas A&amp;M University</i>	Sep. 2025 - Dec.2025 <i>Texas, US</i>
<b>Python Lab Assignment, MATH 150 (Functions, Trigonometry and Linear Systems)</b> <i>Texas A&amp;M University</i>	Jul.2025 <i>Texas, US</i>
<b>MATH 467 (Modern Geometry) Grader</b> <i>Texas A&amp;M University</i>	Jan. 2025 - May.2025 <i>Texas, US</i>
<b>No Teaching Assistant Duties, supported by NSF Grant, P.I. - Tian Yang</b> <i>Texas A&amp;M University</i>	Sep. 2024 - Dec.2024 <i>Texas, US</i>
<b>No Teaching Assistant Duties, supported by NSF Grant, P.I. - Tian Yang</b> <i>Texas A&amp;M University</i>	Jul. 2024 – Dec. 2024 <i>Texas, US</i>
<b>Help Session Tutor, Math 142 (Business Calculus)</b> <i>Texas A&amp;M University</i>	Jun. 2024 <i>Texas, US</i>
<b>No Teaching Assistant Duties, supported by NSF Grant, P.I. - Tian Yang</b> <i>Texas A&amp;M University</i>	Jan. 2024 – May. 2024 <i>Texas, US</i>
<b>Grader, Math 636 (Topology I)</b> <i>Texas A&amp;M University</i>	Aug. 2023 – Dec. 2023 <i>Texas, US</i>
<b>Grader, Math 142 (Business Calculus)</b> <i>Texas A&amp;M University</i>	Jul. 2023 <i>Texas, US</i>
<b>Python Labs, Math 151(Engineering Math I)</b> <i>Texas A&amp;M University</i>	Jun. 2023 <i>Texas, US</i>
<b>Teaching Assistant, Math 152(Engineering Math II)</b> <i>Texas A&amp;M University</i>	Jan. 2023 – May. 2023 <i>Texas, US</i>
<b>Teaching Assistant, Math 151(Engineering Math I)</b> <i>Texas A&amp;M University</i>	Aug. 2022 – Dec. 2022 <i>Texas, US</i>
<b>Grader, Math 304 (Linear Algebra)</b> <i>Texas A&amp;M University</i>	Jun. 2022 <i>Texas, US</i>
<b>Grader, Math 423 (Linear Algebra II)</b> <i>Texas A&amp;M University</i>	Jan. 2022 – May. 2022 <i>Texas, US</i>
<b>Grader, Math 467 (Modern Geometry)</b> <i>Texas A&amp;M University</i>	Aug. 2021 – Dec. 2021 <i>Texas, US</i>
<b>Teaching Assistant(Calculus I, Calculus II)</b> <i>Ulsan National Institute of Science and Technology</i>	Mar. 2018 – Dec. 2019 <i>Ulsan, Korea</i>
<b>Calculus I Open Lecture</b> <i>Ulsan National Institute of Science and Technology</i>	Jun.2018 <i>Ulsan, Korea</i>

## LEADERSHIP/VOLUNTEER ACTIVITIES

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<b>Treasurer</b> <i>Association for Women in Mathematics, Texas A&amp;M University</i> * Women in Math Mentoring Lunch * AWM peer mentoring program	Aug.2022 - May.2023 <i>Texas, US</i>
<b>Teaching Assistant for Math Circle</b> <i>Texas A&amp;M Math Circle</i>	Nov. 2023 <i>Texas, US</i>
<b>Grader for High School Math Contest</b> <i>Texas A&amp;M High School Mathematics Contest</i>	Nov. 2023 <i>Texas, US</i>
<b>Grader for High School Math Contest</b> <i>Texas A&amp;M High School Mathematics Contest</i>	Nov. 2022 <i>Texas, US</i>