

Dongryul M. Kim

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🌐 <https://dongryulkim.github.io/>

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RESEARCH INTEREST

Homogeneous dynamics & Hyperbolic geometry

- Discrete subgroups of Lie groups – Kleinian groups and Anosov representations
- Deformations and Rigidity
- Dynamical systems and Ergodic theory

Geometric topology & Low-dimensional topology

- Hyperbolic 3-manifolds
- Mapping class groups and dynamics on Teichmüller spaces and Complexes of curves
- Geometric group theory
- Random walks on groups and their stationary measures

EMPLOYMENT

- Sep. 2027 – Aug. 2030 **L.E. Dickson Instructor**
The University of Chicago, Chicago, IL, USA
- Aug. 2026 – Jul. 2027 **Member**
Institute for Advanced Study, Princeton, NJ, USA
- Jan. 2026 – May. 2026 **Gamelin Endowed Postdoctoral Fellow**
Simons Laufer Mathematical Sciences Institute (formerly MSRI), Berkeley, CA, USA
○ Program: Geometry and Dynamics for Discrete Subgroups of Higher Rank Lie Groups

EDUCATION

- Sep. 2021 – Dec. 2025 **Yale University**, New Haven, CT, USA
Ph.D. in Mathematics, Advisor: Prof. Hee Oh
○ Dissertation: Rigidity of Kleinian Groups via Dynamics on Higher Rank Spaces
- Mar. 2015 – Feb. 2021 **KAIST**, Daejeon, South Korea
B.S. in Mathematical Sciences (Advanced Major), Summa Cum Laude
○ Left for mandatory military service (Mar. 2017 – Dec. 2018)

PUBLICATIONS

28. Non-arithmeticity of length spectra of subgroups of mapping class groups (with Inhyeok Choi), Preprint (arXiv:2605.13064), Submitted.
27. Measurable boundary maps and Patterson–Sullivan measures for non-Borel Anosov groups on the Furstenberg boundary (with Andrew Zimmer), Preprint (arXiv:2603.28694), Submitted.
26. Vector-valued horofunction boundaries and Patterson–Sullivan measures (with Andrew Zimmer), Preprint (arXiv:2603.28693), Submitted.
25. Classification of horospherical invariant measures in higher rank: The Full Story (with Inhyeok Choi), Preprint (arXiv:2601.22668), Submitted.

24. Determining subgroups via stationary measures (with Andrew Zimmer),
To appear in *International Mathematical Research Notices*.
23. Classification of horospherical invariant measures in higher rank: Teaser (with Inhyeok Choi),
Preprint (arXiv:2510.23365), Teaser of the paper 25. above and not for publication.
22. Invariant Radon measures on the space of measured laminations for subgroups of mapping class group
(with Inhyeok Choi),
Preprint (arXiv:2510.23256), Submitted.
21. A note on the singularity conjecture for infinite covolume discrete subgroups (with Andrew Zimmer),
Preprint (arXiv:2508.05756), Submitted.
20. Rigidity for Patterson–Sullivan systems with applications to random walks and entropy rigidity
(with Andrew Zimmer),
Preprint (arXiv:2505.16556), Submitted.
19. Horocycles in hyperbolic 3-manifolds with round Sierpiński limit sets (with Minju Lee),
To appear in *Groups, Geometry, and Dynamics*.
18. Conformal measure rigidity and ergodicity of horospherical foliations,
Preprint (arXiv:2404.13727), Submitted.
17. Relatively Anosov groups: finiteness, measure of maximal entropy and reparameterization
(with Hee Oh),
Journal für die reine und angewandte Mathematik (Crelle's Journal), Vol. 826 (2025), 91–142.
16. Ahlfors regularity of Patterson-Sullivan measures of Anosov groups and applications
(with Subhadip Dey, Hee Oh),
To appear in *Compositio Mathematica*.
15. Ergodic dichotomy for subspace flows in higher rank (with Hee Oh, Yahui Wang),
Communications of the American Mathematical Society, Vol. 5 (2025), 1–47.
14. Properly discontinuous actions, growth indicators and conformal measures for transverse subgroups
(with Hee Oh, Yahui Wang),
Mathematische Annalen, Vol. 393 (2025), 2391–2450.
13. Non-concentration property of Patterson-Sullivan measures for Anosov subgroups (with Hee Oh),
Ergodic Theory and Dynamical Systems, Vol. 45 (2025), no. 3, 884–893.
12. Conformal measure rigidity for representations via self-joinings (with Hee Oh),
Advances in Mathematics, Vol. 458 (2024), Paper No. 109992.
11. Rigidity of Kleinian groups via self-joinings: measure theoretic criterion (with Hee Oh),
Journal of Topology, Vol. 18 (2025), no. 3, Paper No. e70035.
10. Rigidity of Kleinian groups via self-joinings (with Hee Oh),
Inventiones Mathematicae, Vol. 234 (2023), no. 3, 937–948.
9. Reducible normal generators for mapping class groups are abundant (with Hyungryul Baik, Chenxi Wu),
Journal of Topology and Analysis, Vol. 17 (2025), no. 5, 1313–1323.
8. Hausdorff dimension of directional limit sets for self-joinings of hyperbolic manifolds
(with Yair N. Minsky, Hee Oh),
Journal of Modern Dynamics, Vol. 19 (2023), 433–453.

7. Tent property of the growth indicator functions and applications (with Yair N. Minsky, Hee Oh), *Geometriae Dedicata* (Labourie's volume) Vol. 218 (2024), no. 1, Paper No. 14, 18 pp.
6. Minimal asymptotic translation lengths on curve complexes and homology of mapping tori (with Hyungryul Baik, Chenxi Wu), *Michigan Mathematical Journal*, Vol. 75 (2025), no. 5, 927–942.
5. Linear growth of translation lengths of random isometries on Gromov hyperbolic spaces and Teichmüller spaces (with Hyungryul Baik, Inhyeok Choi), *Journal of the Institute of Mathematics of Jussieu*, Vol. 23 (2024), no. 4, 1751–1795.
4. Simple length spectra as moduli for hyperbolic surfaces and Rigidity of length identities (with Hyungryul Baik, Inhyeok Choi), To appear in *Annales de l'Institut Fourier*.
3. On the asymptotic translation lengths on the sphere complexes and the generalized fibered cone (with Hyungryul Baik, Chenxi Wu), *Transactions of the American Mathematical Society*, Vol. 378 (2025), no. 7, 4739–4764.
2. On the surjectivity of the Symplectic representation of the mapping class group (with Hyungryul Baik, Inhyeok Choi), *Topology and its Applications*, Vol. 322 (2022), Paper No. 108334.
1. Topological entropy of pseudo-Anosov maps from a typical Thurston's construction (with Hyungryul Baik, Inhyeok Choi), *International Mathematical Research Notices* (2022), no. 24, 19862–19904.

Expository writings:

3. Normal generators for mapping class groups (with Hyungryul Baik) To appear in *In the Tradition of Thurston: Geometry and Topology*, Vol. 4.
2. Rigidity theorems for hyperbolic 3-manifolds: from finite volume to infinite volume (in Korean) *Horizon*, a scientific magazine published by KIAS
1. Kleinian Groups from the Sphere at Infinity and Their Self-Joinings, *Handbook of Visual, Experimental and Computational Mathematics*

TALKS

Invited Talks:

34. Midwest Dynamical Systems Conference, Oct. 16–18, 2026
33. AMS Sectional Meeting, Special session on Ergodic Geometry, Oct. 03–04, 2026
32. Seoul National University Workshop on Homogeneous dynamics and Number Theory, Jun. 25–26, 2026
31. International Conference for the 80th Anniversary of the Korean Mathematical Society, Jun. 22–25, 2026
30. Rice Dynamics/Geometry Talk, Apr. 08, 2026
29. SLMath Re-GRAD (Results in Group Actions and Dynamics) Seminar, Mar. 19, 2026
28. SLMath Superrigidity Seminar, Mar. 11, 2026
27. SLMath Geometry and Dynamics for Discrete Subgroups of Higher Rank Lie Groups Seminar, Feb. 23, 2026

26. KIAS Virtual Seminar on Geometry and Topology, Dec. 22, 2025
25. University of Michigan–Ann Arbor Topology Seminar, Dec. 05, 2025
24. University of Michigan–Ann Arbor RTG Geometry, Topology and Dynamics Seminar, Dec. 03, 2025
23. University of Wisconsin–Madison Group Actions and Dynamics Seminar, Oct. 20, 2025
22. Penn State Anatole Katok Center for Dynamical Systems and Geometry Seminar, Sep. 29, 2025
21. Yale Geometry and Topology Seminar, Sep. 09, 2025
20. Yale Undergraduate Math Society Seminar, Sep. 10, 2025
19. KIAS One-day Festival of Group actions, Geometry and Dynamics, Aug. 06, 2025
18. Yale Group Actions and Dynamics Seminar, Apr. 28, 2025
17. Cornell Dynamics Seminar, Apr. 24, 2025
16. Yale Visiting day for Prospective Ph.D. students, Mar. 08, 2025
15. Seoul National University Dynamics seminar, Feb. 19, 2025
14. GT GAPS (Geometric Topology Grad and Postdoc Seminar), Dec. 06, 2025
13. University of Illinois Chicago Ergodic Theory and Dynamical Systems Seminar, Oct. 29, 2024
12. University of Chicago Dynamics Seminar, Oct. 28, 2024
11. University of Wisconsin–Madison Group Actions and Dynamics Seminar, Oct. 21, 2024
10. Meeting with Young Geometric Topologists at KAIST, Jun. 25, 2024
9. Yale Group Actions, Geometry and Dynamics Seminar, Mar. 04, 2024
8. Yale Visiting day for Prospective Ph.D. students, Mar. 10, 2023
7. Yale Group Actions, Geometry and Dynamics Seminar, Oct. 19, 2022
6. Seoul National University Dynamics seminar, Aug. 10, 2022
5. Seoul National University Dynamics seminar, Aug. 09, 2022
4. Yale Visiting day for Prospective Ph.D. students, Mar. 11, 2022
3. CUNY Geometry and Topology Seminar, Nov. 02, 2021
2. Yale Geometry and Topology Seminar, Sep. 21, 2021
1. KIAS Virtual Seminar on Geometry and Topology, Apr. 22, 2020

Contributed Talks:

12. Lightning talk at Geometry and Topology Seminar at Brown and Yale (GATSBY), Nov. 08, 2025
11. Lightning talk at Midwest Summer School in Geometry, Topology, and Dynamics at Madison, Jun. 02, 2025
10. Lightning talk at Geometry and Topology Seminar at Brown and Yale (GATSBY), Apr. 26, 2025
9. Lightning talk at Geometry and Topology Seminar at Brown and Yale (GATSBY), Nov. 16, 2024

8. Moving to higher rank: from hyperbolic to Anosov, A conference in honor of Dick Canary, Jul. 16, 2024
7. Lightning talk at Geometry and Topology Seminar at Brown and Yale (GATSBY), Apr. 20, 2024
6. Workshop on Dynamical systems and related topics at University of Maryland, College Park: in a celebration of Giovanni Forni's 60th birthday, Apr. 07, 2024
5. Graduate Student Seminar at Yale, Jan. 27, 2023
4. Graduate Student Seminar at Yale, Sep. 23, 2022
3. Graduate Student Seminar at Yale, Feb. 11, 2022
2. Graduate Student Seminar at Yale, Sep. 17, 2021
1. Lightning talk at Geometric Group Theory in East Asia, Oct. 30, 2020

MENTORING

General Mentoring

SLMath:

2026 Spring Mentoring a Ph.D. Student

Directed Reading Program (led reading groups, suggested exercises, assigned projects and presentations)

Yale University:

2025 Fall Mapping class groups and Graphs of curves
 2024 Fall Mostow's rigidity theorem

TEACHING

Yale University:

Primary Instructor

2025 Spring MATH 115 Calculus of Functions of One Variable II
 2024 Spring MATH 115 Calculus of Functions of One Variable II

Teaching Fellow

2025 Fall MATH 5260 Introduction to Differentiable Manifolds
 2024 Fall MATH 526 Introduction to Differentiable Manifolds
 2023 Fall MATH 302 Vector Analysis and Integration on Manifolds
 2023 Spring MATH 435 Differential Geometry
 2023 Spring MATH 244 Discrete Mathematics
 2022 Fall MATH 302 Vector Analysis and Integration on Manifolds
 2022 Fall MATH 120 Calculus of Functions of Several Variables

KAIST:

Tutor for freshmen

2020 Fall MAS102 Calculus II
 2020 Spring MAS101 Calculus I
 2019 Fall MAS102 Calculus II

AWARDS AND GRANTS

- June E Huh Visiting Fellowship, June E Huh Center for Mathematical Challenges at KIAS, 2026 – 2029
- AMS International Congress of Mathematicians (ICM) 2026 Travel Grant (NSF, DMS-2529637)
- Gamelin Endowed Postdoctoral Fellowship, Simons Laufer Mathematical Sciences Institute, 2026
- Gibbs medal (Department Dissertation Prize), Yale University, 2025
- Overseas PhD Scholarship, Korea Foundation for Advanced Studies, 2021 – 2025
- Undergraduate Scholarship, Korea Foundation for Advanced Studies, 2019–2021
- Korea Presidential Science Scholarship, Korea Student Aid Foundation, 2015 – 2021
- KAIST Presidential Fellowship (KPF), KAIST, 2015 – 2021

ORGANIZATIONAL ACTIVITIES

- Jan. 2026 – May. 2026 Professional Development Seminar at SLMath
 - Organizer
- Sep. 2022 – Dec. 2022 Yale Graduate Students Seminars
 - Organizer
- Jun. 2022 – May. 2023 Yale Korean Graduate Student Association (KGSA)
 - President
- Aug. 2021 – Jun. 2022 Yale Korean Graduate Student Association (KGSA)
 - Treasurer
- Feb. 2016 – Jun. 2021 KAIST Undergraduate Math Colloquium
 - Organizer
- Jan. 2016 – Jan. 2017 KAIST Presidential Fellowship Student Society
 - Student President

SERVICES

Quick opinion for GAFA

Referee for Compositio, TAMS

- Sep. 2024 – Dec. 2025 Climate Committee, Dept. of Mathematics at Yale University
- Mar. 2017 – Dec. 2018 Republic of Korea Army
 - Mandatory military service, Sentinel & Programmer
- Mar. 2016 – Dec. 2016 Notices of the KAIST College of Natural Sciences
 - Editor, Student Reporter