최인혁

이력서/2025년 4월 수정

미국 뉴욕주 이타카 시 Malott Hall 583호, 코넬대학교 수학과
이메일: inhyeokchoi48@gmail.com
웹사이트: https://inhyeokchoi48.github.io

연구 관심사

제 연구는 기하위상수학, 기하군론 및 동역학 등에 걸쳐 있습니다. 핵심 키워드는 다음과 같습니다. Teichmüller space, mapping class groups, Outer space, $\mathrm{Out}(F_N)$, Gromov hyperbolic spaces, CAT(0) spaces, random walks, Patterson-Sullivan theory, growth of groups.

경력

07/2024-	미국 **코넬대학교** Harry Kesten Assistant Professor
03/2023–06/2024	**KIAS (KAIST부설 고등과학원)** Project Research Fellow (–07/2023), June E Huh Fellow (08/2023–) 멘토교수: 김상현
03/2024–06/2024	캐나다 **필즈 연구소** Marsden 박사후연구원 프로그램 ("Thematic program on Randomness and Geometry" 참가) 멘토교수: Giulio Tiozzo

학력

09/2018–02/2023	**KAIST** 수리과학과 박사 지도교수: 백형렬
03/2015–08/2018	**KAIST** 물리학, 수리과학 및 생명과학 학사 최우등 졸업

기타 경력

07/2024-	고등과학원 허준이수학난제연구소 Visiting fellow
12/2018–02/2019	Tokyo Institute of Technology 방문
08/2017–02/2018	École Polytechnique Féderale de Lausanne 방문
12/2015–06/2017	**KAIST Biomedical Optics Lab** 학사연구원 지도교수: 박용근
06/2015–08/2015	University of California, Berkeley 방문

수상

02/2023	KAIST 수리과학과 2023학년도 학위논문상
08/2022	KAIST 수리과학과 2022학년도 봄학기 우수조교상
03/2017	KAIST 자연과학대학 2016학년도 가을학기 Dean's list
12/2016	전국 대학생수학경시대회 은상
03/2015–08/2018	대통령과학장학생
03/2015–08/2018	KAIST 총장 장학생

논문

1. Acylindrically hyperbolic groups and counting problems
   Preprint (2025), arXiv:2504.20985.

2. 원의 위상동형사상 군의 자유군과 Tits 대안 (Pivoting technique for the circle homeomorphism group)
   Preprint (2025), 일부 번역: arXiv:2504.02788.

3. Smoothing countable group actions on metrizable spaces
   With *Sang-hyun Kim.*
   Preprint (2024), **Proceedings of the Mathematical Society of Japan, Seasonal Institute**에 게재 예정. arXiv:2410.06077.

4. Counting pseudo-Anosovs as weakly contracting isometries
   Preprint (2024). arXiv:2408.00603.

5. Confined subgroups in groups with contracting elements
   With *Ilya Gekhtman, Wenyuan Yang and Tianyi Zheng.*
   Preprint (2024). arXiv:2405.09070.

6. Contracting isometries and differentiability of the escape rate
   Preprint (2024). arXiv:2403.09992.

7. Random walks on groups and superlinear divergent geodesics
   With *Kunal Chawla, Vivian He and Kasra Rafi.*
   Ergodic Theory and Dynamical Systems, Vol. 45, no. 5, pp. 1403–1443 (2025). `https://doi.org/10.1017/etds.2024.75`, arXiv:2310.18506.

8. Genericity of contracting geodesics in groups
   With *Kunal Chawla and Giulio Tiozzo.*
   Preprint (2023). **Groups, Geometry, and Dynamics**에 게재 예정. arXiv:2308.01877.

9. Random walks and contracting elements III: Outer space and outer automorphism group
   Preprint (2023). arXiv:2212.12122.

10. Random walks and contracting elements II: Translation lengths and quasi-isometric embedding
    Preprint (2023). **Groups, Geometry, and Dynamics** 온라인 사전 게재, `https://doi.org/10.4171/ggd/831`.

11. Random walks and contracting elements I: Deviation inequality and limit laws
    Preprint (2023). arXiv:2207.06597. **Compositio Mathematica**에 게재 예정.

12. Random walks on mapping class groups (survey paper)
    With *Hyungryul Baik.*
    EMS Surveys in Mathematical Sciences, 9 (2022), no. 2, pp. 279–320. `https://doi.org/10.4171/EMSS/59`.

13. Pseudo-Anosovs are exponentially generic in mapping class groups
    Geometry & Topology, Vol. 28, pp. 1923-1955. (2024) `https://doi.org/10.2140/gt.2024.28.1923`.

14. Central limit theorem and geodesic tracking on hyperbolic spaces and Teichmüller spaces
    Advances in Mathematics, Vol. 431, 109236 (2023). `https://doi.org/10.1016/j.aim.2023.109236`.

15. Linear growth of translation lengths of random isometries on Gromov hyperbolic spaces and Teichmüller spaces
    With *Hyungryul Baik and Dongryul M. Kim.*
    Journal of the Institute of Mathematics of Jussieu, Vol. 23, no. 4, pp. 1751–1795. `https://doi:10.1017/S1474748023000373`.

16. Simple length spectra as moduli for hyperbolic surfaces and rigidity of length identities
    With *Hyungryul Baik and Dongryul M. Kim.* **Annales de l'Institut Fourier**에 게재 예정.
    Preprint (2020). arXiv:2012.05652.

17. On the surjectivity of the Symplectic representation of the mapping class group
    With *Hyungryul Baik and Dongryul M. Kim.*
    Topology and its Applications, Vol. 322, 108334 (2022). `https://doi.org/10.1016/j.topol.2022.108334`.

18. Topological entropy of pseudo-Anosov maps from a typical Thurston construction
    With *Hyungryul Baik and Dongryul M. Kim.*
    International Mathematics Research Notices, Vol. 2022, No. 24, pp. 19762-19904. (2022) `https://doi.org/10.1093/imrn/rnab167`

19. Inhyeok Choi, KyeoReh Lee, and YongKeun Park. Compensation of aberration and speckle noise in quantitative phase imaging using lateral shifting and spiral phase integration. **Optics Express**, 25(24) pp. 30771-30779 (2017).

연구 발표

강연 시리즈

2023.07.29.   Growth of (sub)groups with hyperbolicity. (강연 3회 및 1주일간 그룹 토의 진행) *Geometry in Groups 2024. TIFR-ICTS, Bangalore, India.*

2024.05.03.   Hyperbolicity of geodesics, counting and random walks. (강연 4회) *Riverside Workshop on Geometric Group Theory 2024, UC Riverside.*

초청 발표

2025.06.16.   Genericity problem in groups with negative curvature. *Geometric Group Theory and Related Topics. BICMR, Peking University, China.*

2025.05.19.   Counting pseudo-Anosovs and fully irreducibles. *53rd Barrett Lectures: Recent Development in Geometric Group Theory. TN, USA.*

2025.04.15.   Genericity of pseudo-Anosovs and quasi-isometries. *Stanford Topology Seminar. CA, USA.*

2025.04.01.   Genericity of pseudo-Anosovs and quasi-isometries. *Geometry & Topology Seminar. Rutgers New Brunswick, NJ, USA.*

2025.03.14.   Dynamics of semigroups of circle homeomorphisms. *The Scottish Dynamics Network. Heriot-Watt University, Edinburgh, UK.*

2025.03.12.   Genericity of pseudo-Anosovs and quasi-isometries. *Algebra, Geometry, and Topology Seminar. Heriot-Watt University, Edinburgh, UK.*

2025.03.06.   Genericity of pseudo-Anosovs and quasi-isometries. *Binghamton Geometry & Topology Seminar. NY, USA.*

2025.02.14.   Genericity of pseudo-Anosovs and quasi-isometries. *SUNY at Buffalo Geometry & Topology Seminar. NY, USA.*

2024.01.16.   Free discrete subgroups of Homeo(S) and the fine curve graph. *Virtual Seminar in Geometry and Topology (VISGAT),* 고등과학원.

2024.12.03.   Metric WPD for Homeo(S): loxodromics on the fine curve graph. *KAIST 위상수학 세미나.*

2024.11.28.   Metric WPD for Homeo(S): loxodromics on the fine curve graph. *Hyperbolic Lunch, University of Toronto.*

2024.10.22.   Genericity of pseudo-Anosovs and quasi-isometries. *CUNY Geometry & Topology Seminar, CUNY.*

2024.09.24.   Genericity of pseudo-Anosovs and quasi-isometries. *KIAS-Rice Workshop on Geometric Topology,* 고등과학원 허준이수학난제연구소.

2024.09.05.	Genericity of pseudo-Anosovs and quasi-isometries. *Cornell Dynamics Seminar.* (예정)
2024.06.25.	Sullivan's conjecture, Myrberg limit set and Hausdorff dimension. *One day workshop with Young Geometric Topologists at KAIST.*
2024.05.13.	Continuity of escape rate of random walks on CAT(0) spaces. *Dynamics of group actions and random walks on groups, Fields Institute.*
2024.04.21.	Confined subgroups and their growth. *Alfréd Rényi Institute. Budapest, Hungary.*
2024.04.08.	Genericity of pseudo-Anosov mapping classes. *Young Geometric Group Theory XII, Bristol, UK.*
2024.04.04.	Genericity of pseudo-Anosovs (and fully irreducibles). *Princeton Topology Seminar, Princeton University.*
2024.04.02.	Genericity of pseudo-Anosov mapping classes. *Brandeis Topology Seminar, Brandeis University.*
2024.03.20.	Random walks, superlinear divergence and quasi-isometry. *UBC Probability Seminar, University of British Columbia.*
2024.03.15.	Growth of normal subgroups of a hyperbolic group. *GT GAPS Seminar.* (Online)
2024.02.29.	Normal subgroups, confined subgroups and growth. *Korea-France Workshop on Dynamical Group Theory,* 고등과학원.
2024.01.17.	Regularity of the escape rate and the asymptotic entropy of a random walk. *KAIST GT Fair 2024,* 부산.
2023.11.03.	Genericity of contracting elements in groups. 서울대학교 *Rookies Workshop 2023,* 양평.
2023.10.28.	Generic mapping classes are pseudo-Anosov. *2023* 대한수학회 가을 발표회, 서울대학교.
2023.10.05.	Genericity of contracting elements in groups. *Tokyo-Seoul Conference in Mathematics 2023, The University of Tokyo.*
2023.09.11.	Random walks on groups without an action on hyperbolic spaces. *Topology seminar, KAIST.*
2023.09.04.	Genericity of contracting elements in groups. *World of GroupCraft III.* (Online)
2023.08.21.	Genericity of contracting elements in groups. *The 4th Korea-France Conference in Mathematics,* 고등과학원.
2023.07.14.	Geometry and dynamics of a finitely generated group. *Workshop on Quantum Analysis 2023,* 속초.
2023.04.20.	Random walks on non-positively curved spaces: rate of escape, CLT and large deviation principle. *Conference on Probability and PDE, KAIST.*
2023.04.06.	Counting pseudo-Anosov mapping classes. (a series of 4 talks) *Virtual Seminar on Geometry and Topology,* 고등과학원.
2023.02.09.	Asymmetry of a generic outer automorphism of a free group. *The 18th East Asian Conference on Geometric Topology.* (온라인)
2022.11.08.	Random subgroup is quasi-isometrically embedded. *Geometry and Topology Seminar, CUNY.*
2022.11.08.	The log-regularity of the hitting measure on the Gromov boundary. *Group actions, Geometry and Dynamics Seminar, Yale University.*
2022.11.02.	Asymmetry of a typical outer automorphism. *Geometry and Topology Seminar, Temple university.*
2022.10.27.	Simple length spectrum of a hyperbolic surface. *Hyperbolic lunch, University of Toronto.*
2022.10.24.	Mapping class group, Teichmüller space and Bers' proof of Nielsen-Thurston's classification. *Dynamics Seminar, University of Toronto.*
2022.05.12.	Typical behavior of random mapping classes and outer automorphisms. *Fudan Topology Seminar.* (온라인)
2022.04.11.	Limit laws beyond hyperbolic spaces. *AIM Workshop "Random walks beyond hyperbolic groups".*
2021.12.03.	Limit laws for random walks on mapping class groups. *Conformal Dynamics and Groups Seminar, BICMR.* (온라인)
2021.11.29.	Random walks on mapping class groups favor pseudo-Anosovs. *Dynamics Seminar, University of Toronto.* (온라인)

2021.11.18.	Random walks, counting problems and genericity of loxodromics. *Geometry and Topology Seminar, Technion.* (온라인)
2021.10.06.	Random walks on Gromov hyperbolic spaces and Teichmüller spaces. *Tokyo Tech Topology Seminar.* (온라인)
2021.07.22.	Random walks on Gromov hyperbolic spaces and Teichmüller spaces. *Pacific Dynamics Seminar.* (온라인)
2021.02.03.	Simple length spectra of a generic hyperbolic surface determine its isometry class. *Virtual Seminar on Geometry and Topology.* (온라인)

참가 발표

2022.05.31.	Frequently contracting geodesics and random mapping class. *PK2 Topology Workshop.*
2022.04.25.	Limit laws and their consequences on MCG and Out(Fn). 5-min lightning talk, *IHP Conference "Mapping Class Groups and Out(Fn)".*
2022.01.18.	Random mapping classes are pseudo-Anosov. *The 17th East Asian Conference on Geometric Topology.* (온라인)
2021.01.26.	Rigidity of length Identities of hyperbolic surfaces. *The 16th East Asian Conference on Geometric Topology.* (온라인)
2020.10.30.	Random walks and mapping class groups. 10-minute talk at *Geometric Group Theory in East Asia.* (온라인)

학회 조직

2023.12.18–20.	Hyperbolic Geometry of Numbers, 고등과학원 (공동조직위원: 김상현 (고등과학원), Ser Peow Tan (NUS))
2023.09.27–28.	The 1st Korea-Chile Workshop on Dynamical Group Theory, 인천 (공동조직위원: 김상현 (고등과학원))

교육

코넬대학교

2025 봄	MATH 3040 Prove It! 강의
2024 가을	MATH 1110 Calculus I 강의

KAIST

2022 가을	MAS102 미적분학 II & MAS430 조합적 위상수학 조교
2022 봄	MAS109 선형대수학개론, MAS201 응용미분방정식 조교
2021 가을	MAS201 응용미분방정식, MAS441 르베그적분론 조교
2021 봄	MAS109 선형대수학개론, MAS331 위상수학 조교
2020 가을	MAS102 미적분학 II, MAS441 르베그적분론 조교
2020 봄	MAS201 응용미분방정식 총괄조교
2019 가을	MAS201 응용미분방정식, MAS441 르베그적분론 조교
2019 봄	MAS201 응용미분방정식, MAS331 위상수학 조교
2018 가을	MAS355 수리통계학 조교
2017 봄, 2018 봄	MAS101 미적분학 I 학부생조교

봉사 및 대외활동

- 다음에 심사 의견 제출: *Advances in Mathematics, Annales Henri Lebesgue, Annales de l'IHP (B), Compositio Mathematica, Israel Journal of Mathematics, Journal of Topology, MathSciNet Mathematical Reviews.*

- Cornell Topology Seminar 주관: 2024학년도 가을학기 및 2025학년도 봄학기