최인혁

이력서/2024년 3월 수정

서울광역시 동대문구 회기로 85 KAIST부설 고등과학원 허준이수학난제연구센터
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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, dynamics of groups acting on spaces.

경력

03/2023–	**KIAS (KAIST부설 고등과학원)**
	Project research fellow (–07/2023), June E Huh fellow (08/2023–) (박사후연구원)
	멘토교수: 김상현 교수님
03/2024–06/2024	캐나다 **필즈 연구소**
	Marsden 박사후연구원 프로그램 ("Thematic program on Randomness and Geometry" 참가)
	멘토교수: Prof. Giulio Tiozzo

학력

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

기타 경력

12/2018–02/2019	Tokyo Institute of Technology 교환학생
08/2017–02/2018	École Polytechnique Féderale de Lausanne 교환학생
12/2015–06/2017	**KAIST Biomedical Optics Lab** 학사연구원
	지도교수: 박용근 교수님
06/2015–08/2015	University of California, Berkeley 교환학생

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

2. Random walks on groups and superlinear divergent geodesics
With *Kunal Chawla, Vivian He and Kasra Rafi.*
Preprint (2023). arXiv:2310.18506.

3. Genericity of contracting geodesics in groups
With *Kunal Chawla and Giulio Tiozzo.*
Preprint (2023). arXiv:2308.01877.

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

5. Random walks and contracting elements II: Translation lengths and quasi-isometric embedding
Preprint (2023). arXiv:2212.12119.

6. Random walks and contracting elements I: Deviation inequality and limit laws
Preprint (2023). arXiv:2207.06597.

7. 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.

8. Pseudo-Anosovs are exponentially generic in mapping class groups
Preprint (2021). To appear in **Geometry & Topology**. arXiv:2110.06678.

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

10. Linear growth of translation lengths of random isometries on Gromov hyperbolic spaces and Teichmüller spaces
With *Hyungryul Baik and Dongryul M. Kim.*
Preprint (2021). To appear in **Journal of the Institute of Mathematics of Jussieu**. arXiv:2103.13616.

11. Simple length spectra as moduli for hyperbolic surfaces and rigidity of length identities
With *Hyungryul Baik and Dongryul M. Kim.*
Preprint (2020). arXiv:2012.05652.

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

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

14. 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

초청 발표

2024.05.13.   TBD. *Dynamics of group actions and random walks on groups, Fields Institute.*
2024.05.03.   Hyperbolicity of geodesics, counting and random walks. (series of 4 talks) *Riverside Workshop on Geometric Group Theory 2024, UC Riverside.*

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, Sokcho, Korea.*

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 (김상현 교수님 및 Ser Peow Tan 교수님과 공동으로 조직)
2023.09.27–28.	The 1st Korea-Chile Workshop on Dynamical Group Theory, 인천 (김상현 교수님과 공동으로 조직)

교육

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: *Annales Henri Lebesgue, Mathematical Reviews*

- 고등과학원 웹진 〈Horizon〉에 수학 만화 연재