

# 최인혁

서울광역시 동대문구 회기로 85 KAIST부설 고등과학원 허준이수학난제연구센터

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이력서/2023년 11월 최종 수정 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,  $\text{Out}(F_N)$ , Gromov hyperbolic spaces,  $\text{CAT}(0)$  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

## 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 Fédérale 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

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. Random walks on groups and superlinear divergent geodesics  
With *Kunal Chawla, Vivian He and Kasra Rafi*.  
Preprint (2023). arXiv:2310.18506.
2. Genericity of contracting geodesics in groups  
With *Kunal Chawla and Giulio Tiozzo*.  
Preprint (2023). arXiv:2308.01877.

3. Random walks and contracting elements III: Outer space and outer automorphism group  
Preprint (2023). arXiv:2212.12122.
4. Random walks and contracting elements II: Translation lengths and quasi-isometric embedding  
Preprint (2023). arXiv:2212.12119.
5. Random walks and contracting elements I: Deviation inequality and limit laws  
Preprint (2023). arXiv:2207.06597.
6. Random walks on mapping class groups (survey paper)  
With *Hyungrul Baik*.  
**EMS Surveys in Mathematical Sciences**, 9 (2022), no. 2, pp. 279–320. <https://doi.org/10.4171/EMSS/59>.
7. Pseudo-Anosovs are exponentially generic in mapping class groups  
Preprint (2021). To appear in **Geometry & Topology**. arXiv:2110.06678.
8. 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>.
9. Linear growth of translation lengths of random isometries on Gromov hyperbolic spaces and Teichmüller spaces  
With *Hyungrul Baik and Dongryul M. Kim*.  
Preprint (2021). To appear in **Journal of the Institute of Mathematics of Jussieu**. arXiv:2103.13616.
10. Simple length spectra as moduli for hyperbolic surfaces and rigidity of length identities  
With *Hyungrul Baik and Dongryul M. Kim*.  
Preprint (2020). arXiv:2012.05652.
11. On the surjectivity of the Symplectic representation of the mapping class group  
With *Hyungrul Baik and Dongryul M. Kim*.  
**Topology and its Applications**, Volume 322, 108334 (2022). [doi.org/10.1016/j.topol.2022.108334](https://doi.org/10.1016/j.topol.2022.108334).
12. Topological entropy of pseudo-Anosov maps from a typical Thurston construction  
With *Hyungrul Baik and Dongryul M. Kim*.  
**International Mathematics Research Notices**, Volume 2022, No. 24, pp. 19762–19904. (2022) <https://doi.org/10.1093/imrn/rnab167>
13. 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

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### 초청 발표

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|-------------|--|
| 2024.05.13. | TBD. <i>Dynamics of group actions and random walks on groups</i> , <i>Fields Institute</i> .<br>(예정)   |
| 2024.05.03. | Hyperbolicity of geodesics, counting and random walks. (series of 4 talks) <i>Riverside Workshop on Geometric Group Theory 2024, UC Riverside</i> . (예정) |
| 2024.04.08. | TBD. <i>Young Geometric Group Theory XII, Bristol, UK</i> . (예정)   |
| 2023.11.03. | Genericity of contracting elements in groups. <i>서울대학교 Rookies Workshop 2023, 양평</i> .   |
| 2023.10.28. | Generic mapping classes are pseudo-Anosov. <i>2023 대한수학회 가을 발표회, 서울대학교</i> .   |
| 2023.10.05. | Genericity of contracting elements in groups. <i>Tokyo-Seoul Conference in Mathematics 2023, The University of Tokyo</i> .                               |

- 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, KIAS*.
- 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, KIAS*.
- 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  $\text{Out}(F_n)$ . 5-min lightning talk, *IHP Conference "Mapping Class Groups and  $\text{Out}(F_n)$ "*.
- 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

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- 2023.12.18–20. Hyperbolic Geometry of Numbers, KIAS  
2023.09.27–28. The 1st Korea-Chile Workshop on Dynamical Group Theory, 인천

## 교육

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- 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

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- 다음에 심사 의견 제출: *Annales Henri Lebesgue*, *Mathematical Reviews*
- 고등과학원 웹진 (Horizon)에 수학 만화 연재