

최인혁

이력서/2024년 7월 수정

미국 뉴욕주 이타카 시 Marlott Hall 310, 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, $\text{Out}(F_N)$, Gromov hyperbolic spaces, $\text{CAT}(0)$ spaces, random walks, dynamics of groups acting on spaces.

경력

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|-----------------|---|
| 07/2024- | 미국 코넬대학교
Harry Kesten Assistant Professor (박사후연구원) |
| 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 펄즈 연구소
Marsden 박사후연구원 프로그램 ("Thematic program on Randomness and Geometry" 참가)
멘토교수: Prof. Giulio Tiozzo |

학력

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| 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

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|-----------------|---|
| 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

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| 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 |

1. Confined subgroups in groups with contracting elements
With *Ilya Gekhtman, Wenyan Yang and Tianyi Zheng*.
Preprint (2024). arXiv:2405.09070.
2. Contracting isometries and differentiability of the escape rate
Preprint (2024). arXiv:2403.09992.
3. Random walks on groups and superlinear divergent geodesics
With *Kunal Chawla, Vivian He and Kasra Rafi*.
Preprint (2023). arXiv:2310.18506.
4. Genericity of contracting geodesics in groups
With *Kunal Chawla and Giulio Tiozzo*.
Preprint (2023). arXiv:2308.01877.
5. Random walks and contracting elements III: Outer space and outer automorphism group
Preprint (2023). arXiv:2212.12122.
6. Random walks and contracting elements II: Translation lengths and quasi-isometric embedding
Preprint (2023). arXiv:2212.12119.
7. Random walks and contracting elements I: Deviation inequality and limit laws
Preprint (2023). arXiv:2207.06597.
8. 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>.
9. Pseudo-Anosovs are exponentially generic in mapping class groups
Preprint (2021). To appear in **Geometry & Topology**. arXiv:2110.06678.
10. 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>.
11. 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.
12. 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.
13. 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.
14. 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>
15. 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).

초청 발표

- 2023.07.29. TBA. *Geometry in Groups 2024. ICTS, Bangalore, India.*
- 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.*
- 2024.05.03. 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 $\text{Out}(Fn)$. 5-min lightning talk, *IHP Conference "Mapping Class Groups and $\text{Out}(Fn)$ "*.
- 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