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POSITIONS

- **Korea Advanced Institute of Science and Technology** 2024-present  
Associate Professor
- **Korea Advanced Institute of Science and Technology** 2021-2024  
Assistant Professor
- **Georgia Institute of Technology** 2018-2020  
Visiting Assistant Professor
- **Max Planck Institute for Mathematics** 2017-2018  
Postdoctoral Fellow

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EDUCATION

- **Ph.D. in Mathematics**, Rice University 2011-2017  
Advisors: Dr. Tim Cochran, Dr. Shelly Harvey
- **B.S. in Mathematics**, Pohang University of Science and Technology 2005-2011

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PREPRINTS  
ACCEPTED

- **The  $(2, 1)$ -cable of the figure-eight knot is not smoothly slice**  
with I. Dai, S. Kang, A. Mallick, and M. Stoffregen *arXiv:2207.14187*  
To appear in *Invent. Math.*
- **Definite fillings of lens spaces**  
with P. Aceto and D. McCoy *arXiv:2208.02586*  
To appear in *J. Differential Geometry*
- **Torsion in the knot concordance group and cabling**  
with S. Kang *arXiv:2207.11870*  
To appear in *J. Eur. Math. Soc. (JEMS)*

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PUBLICATIONS

- **A note on rational band moves**  
with D. Chen, J. Hom, M. H. Kim and Z. Wu  
*Matematica 3 (2024), no.2, 777–782.*
- **A note on the concordance  $\mathbb{Z}$ -genus**  
with A. Miller  
*Michigan Math. J. 74 (2024), no.1, 73–83.*
- **The  $\mathbb{Z}$ -genus of boundary links**  
with P. Feller and M. Powell  
*Rev. Mat. Complut. 36 (2023), no. 1, 1–25.*
- **Linear independence of rationally slice knots**  
with J. Hom, S. Kang, and M. Stoffregen  
*Geom. Topol. 26 (2022), no. 7, 3143–3172.*
- **A ribbon obstruction and derivatives of knots**  
with M. Powell  
*Israel J. Math. 250 (2022), no. 1, 265–305.*
- **Non-simply connected symplectic fillings of lens spaces**  
with P. Aceto and D. McCoy  
*Bull. Lond. Math. Soc. 54 (2022), no. 3, 1010–1026.*
- **A note on the four-dimensional clasp number of knots**  
with P. Feller  
*Math. Proc. Cambridge Philos. Soc. 173 (2022), no. 1, 213–226.*
- **The relative Whitney trick and its applications**  
with C. Davis and P. Orson  
*Selecta Math. (N.S.) 28 (2022), no. 2, Paper No. 27.*
- **Ribbon knots, cabling, and handle decompositions**  
with J. Hom and S. Kang  
*Math. Res. Lett. 28 (2021), no.5, 1441–1457.*

- **Branched covers bounding rational homology balls**  
with P. Aceto, J. Meier, A. Miller, M. Miller, and A. Stipsicz  
*Algebr. Geom. Topol.* 21 (2021), no. 7, 3569–3599.
- **Pretzel links, mutation, and the slice-ribbon conjecture**  
with P. Aceto, M. H. Kim, and A. Ray  
*Math. Res. Lett.* 28 (2021), no. 4, 945–966.
- **On distinct finite covers of 3-manifolds**  
with S. Friedl, B. Petri, J. Raimbault, and A. Ray.  
*Indiana Univ. Math. J.* 70 (2021), no. 2, 809–846.
- **Linear independence of cables in the knot concordance group**  
with C. Davis and A. Ray.  
*Trans. Amer. Math. Soc.* 374 (2021), no. 6, 4449–4479.
- **Homology spheres and property R**  
with M. H. Kim.  
*Proc. Amer. Math. Soc.* 149 (2021), no. 3, 1323–1328.
- **Concordance to links with an unknotted component**  
with C. Davis.  
*Math. Proc. Cambridge Philos. Soc.* 170 (2021), no. 1, 155–160.
- **Genus one cobordisms between torus knots**  
with P. Feller.  
*Int. Math. Res. Not. IMRN* (2021), no. 1, 521–548.
- **Rational cobordisms and integral homology**  
with P. Aceto and D. Celoria.  
*Compos. Math.* 156 (2020), no. 9, 1825–1845.
- **Smooth and topological almost concordance**  
with M. Nagel, P. Orson, and M. Powell.  
*Int. Math. Res. Not. IMRN* (2019), no. 23, 7324–7355.
- **Every genus one algebraically slice knot is 1-solvable**  
with C. Davis, T. Martin, C. Otto.  
*Trans. Amer. Math. Soc.* 372 (2019), no. 5, 3063–3082.
- **On the Upsilon invariant and satellite knots**  
with P. Feller and A. Ray.  
*Math. Z.* 292 (2019), no. 3-4, 1431–1452.
- **Links with nontrivial Alexander polynomial which are concordant to the Hopf link**  
with M. H. Kim and D. Kratovich.  
*Trans. Amer. Math. Soc.* 371 (2019), no. 8, 5379–5400.
- **Concordance of knots in  $S^1 \times S^2$**   
with C. Davis, M. Nagel, and A. Ray.  
*J. Lond. Math. Soc.* (2) 98 (2018), no. 1, 59–84.
- **A construction of slice knots via annulus modifications**  
*Topology Appl.* 238 (2018), 1–19.
- **A family of topologically slice links with arbitrarily large smooth slice genus**  
with A. Ray.  
*Proc. Amer. Math. Soc.* 146 (2018), 439–448.
- **Inequality on  $t_\nu(K)$  defined by Livingston and Naik and its applications**  
*Proc. Amer. Math. Soc.* 145 (2017), 889–891.

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PREPRINTS

- **Exotic Dehn twists and homotopy coherent group actions**  
with S. Kang and M. Taniguchi *arXiv:2409.11806*
- **A survey on embeddings of 3-manifolds in definite 4-manifolds**  
with P. Aceto and D. McCoy *arXiv:2407.03692*
- **Cables of the figure-eight knot via real Frøyshov invariants**  
with S. Kang and M. Taniguchi *arXiv:2405.09295*

- **Doubled Disks and Satellite Surfaces**  
with G. Guth, K. Hayden, and S. Kang *arXiv:2310.19713*
- **Concordance to boundary links and the solvable filtration**  
with C. Davis and S. Harvey *arXiv:2305.11268*
- **Topologically and rationally slice knots**  
with J. Hom and S. Kang *arXiv:2304.06265*
- **Slice obstructions from genus bounds in definite 4-manifolds**  
with P. Aceto, N. Castro, M. Miller, and A. Stipsicz *arXiv:2303.10587*
- **Handle decomposition complexibility and representation spaces**  
with P. Aceto, A. Daemi, J. Hom, and T. Lidman *arXiv:2210.06607*
- **Unknotting number and cabling**  
with J. Hom and T. Lidman *arXiv:2206.04196*
- **Seifert surfaces in the 4-ball**  
with K. Hayden, S. Kim, M. Miller, and I. Sundberg *arXiv:2205.15283*
- **Isotopy and equivalence of knots in 3-manifolds**  
with P. Aceto, C. Bregman, C. Davis, and A. Ray *arXiv:2007.05796*
- **Embedding lens spaces in definite 4-manifolds**  
with P. Aceto. *arXiv:1903.01260*
- **Milnor's triple linking number and derivatives of genus three knots**  
*arXiv:1603.09163*

AWARDS  
AND  
GRANTS

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- Member of Young Korean Academy of Science and Technology  
*The Korean Academy of Science and Technology, 2023-present*
  - TJ Park Science Fellowship  
*POSCO TJ Park Foundation, 2022-present*
  - Samsung Science and Technology Foundation Grant  
*Samsung Science and Technology Foundation, 2021-present*
  - Sangsan Prize for Young Mathematicians  
*Korean Mathematical Society, 2021*
  - AMS-Simons travel grant  
*American Mathematical Society and Simons Foundation, 2020-2022*
  - AIM SQuaRE Grant (with P. Aceto, N. Castro, M. Miller, and A. Stipsicz)  
*Fibered ribbon knots and Casson–Gordon exotic 4-spheres, 2019-present*
  - 2011 Fulbright Graduate Study Award  
*Fulbright Korean-American Educational Commission, 2011-2013*

TEACHING

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- **Korea Advanced Institute of Science and Technology**
    - MAS 102: Calculus II *Fall 2024*
    - MAS 101: Calculus I *Spring 2024*
    - MAS 109: Introduction to Linear Algebra *Spring 2024*
    - MAS 430: Combinatorial Topology *Fall 2023*
    - MAS 101: Calculus I *Spring 2023*
    - MAS 331: Topology *Spring 2023*
    - MAS 532: Algebraic Topology II *Fall 2022*
    - MAS 531: Algebraic Topology I *Spring 2022*
    - MAS 532: Algebraic Topology II *Fall 2021*
    - MAS 531: Algebraic Topology I *Spring 2021*
  - **Georgia Institute of Technology**
    - Math 1554: Linear Algebra *Fall 2020*
    - Math 2106: Foundations of Mathematical Proof *Spring 2020*
    - Math 1551: Differential Calculus *Fall 2019*
    - Math 1552: Integral Calculus *Spring 2019*
    - Math 1551: Differential Calculus *Fall 2018*
  - **Rice University**
    - Math 355: Linear algebra *Summer 2014*
    - Math 211: Ordinary differential equations and linear algebra *Fall 2013*

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STUDENTS

- Hoon Lee *Ph.D. expected 2029*
- Kyo Hyeon Gu *Ph.D. expected 2029*
- Yunseo Jo *Ph.D. expected 2027*
- Dongjun Lee *Ph.D. expected 2027*
- Seokhyun Eum *Ph.D. expected 2027*
- Kee Taek Kim *Ph.D. expected 2026*
- Jaewon Lee *Masters 2022, Ph.D. expected 2026*

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POSTDOCS

- Dongsoo Lee *Fall 2023-present*
- Hayato Imori *Spring 2024-present*