

Dongho Lee

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Research Interests

Symplectic Geometry, Symplectic Dynamics, Reeb Dynamics, Three-body Problem

Education

Ph.D. in Mathematics

Department of Mathematics, Seoul National University, Seoul, Korea Mar 2018 – Feb 2025

Bachelor of Science in Mathematics

Bachelor of Economics in Economics, Minor in Physics

College of Liberal Studies, Seoul National University, Seoul, Korea Mar 2013 – Feb 2018
Graduated with Honors

Research Experience

Postdoctoral Researcher

Research Institute of Mathematics, Seoul National University Mar 2025 – Present
Postdoctoral Supervisor: Prof. Cheol-hyun Cho
– Research on periodic orbits in the three-body problem via symplectic geometry.

Graduate Student Researcher

Department of Mathematics, Seoul National University Mar 2018 – Feb 2025
Ph.D Advisor: Prof. Otto van Koert
– Focus on global hypersurfaces of section and the three-body problem in symplectic and contact geometry.

Manuscripts and Publications

- Fiberwise Convexity of Restricted Three-body Problem** (Manuscript)
with Sunghae Cho and Beomjun Sohn In preparation
– Investigating fiberwise convexity in the restricted three-body problem, relating it to spatial periodic orbits.
- Global Hypersurfaces of Section and the Spatial Kepler Problem**
Advisor: Prof. Otto van Koert Ph.D. Thesis, Dec 2024
– Demonstrated existence of global hypersurfaces of section for certain Hamiltonian systems.
– Provided simplified descriptions of the moduli space of periodic orbits in the rotating Kepler problem and computed Conley-Zehnder indices.
- Global Hypersurfaces of Section for Geodesic Flows on Convex Hypersurfaces**
with Sunghae Cho *Archiv der Mathematik*, 31 Jul 2024
– Constructed a global hypersurface of section for geodesic flows on convex hypersurfaces with isometric involution, generalizing Birkhoff annuli to higher dimensions.

Presentations

1. **Closed orbits of the spatial rotating Kepler problem** (Scheduled)
2025 Korean Mathematical Society Spring Meeting, Daejeon, Korea 24 – 26 Apr 2025

Personal Affiliations

- Korean Mathematical Society**, Korea 2025 – Present
QSMS-BK21 Symplectic Seminar, Korea 2021 – Present

Conference Participation

- 2025 Symplectic Retreat** 23 – 26 Jan 2025
Stanford Hotel, Tongyeong, Korea
- From Hamiltonian Dynamics to Symplectic Topology and Beyond** 3 – 7 Jun 2024
A 2024 celebration of Claude Viterbo and his mathematics
Institut Henri Poincaré, Paris, France
- Topology of 4-manifolds and Related Topics** 21 – 27 Jan 2024
A conference in honor of Jongil Park's 60th birthday
Ocean Suites Hotel, Jeju, Korea
- East Asian Symplectic Conference 2023** 29 Oct – 4 Nov 2023
Ocean Suites Hotel, Jeju, Korea
- QSMS Workshop on Symplectic Geometry and Related Topics** 5 – 10 Feb 2023
Ocean Suites Hotel, Jeju, Korea
- Workshop on Symplectic Dynamics** 27 Jun – 1 Jul 2022
Instituto Superior Técnico, Lisboa, Portugal
- Symplectic Geometry and Beyond (Part I)** 7 – 10 Feb 2022
Conference on the occasion of Yong-Geun Oh's 61st birthday
Ocean Suite Hotel, Jeju, Korea
- Fukaya 60 Geometry and Everything** 17 – 22 Feb 2019
A conference in honor of Kenji Fukaya's 60th birthday
Kyoto University, Kyoto, Japan

Teaching Experience

Teaching and Course Assistant, Seoul National University Mar 2018 – Feb 2025

Major Courses

Algebraic Topology (Graduate Course)	Fall 2019
Introduction to Topology	Spring 2023, Spring 2020
Introduction to Differential Geometry	Spring, Fall 2021
Selected Topics Seminar (College of Liberal Studies)	Spring 2023
Probability in mathematical and philosophical viewpoints	

General Education Courses

Head Teaching Assistant for Introductory Mathematics Courses	Spring 2020
Assisted in course planning and exam preparation	
Engineering Mathematics	Fall 2024, Fall, Summer, Spring 2023, Fall 2020
Calculus for Life Science	Fall 2022, Spring 2021
Fundamentals and Applications of Mathematics	Spring 2022
Calculus course for liberal arts students	
Calculus Practice	Fall, Spring 2018
Calculus	Fall, Spring 2018

Awards and Honors

Merit-based Scholarship , Department of Mathematics, Seoul National University	2018
National Scholarship , Korean Student Aid Foundation	2015
Merit-based Scholarship , College of Liberal Studies, Seoul National University	2013

References

Prof. Otto van Koert
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Relationship: Ph.D. Advisor

Prof. Cheol-hyun Cho
Department of Mathematics, Seoul National University
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Relationship: Postdoctoral Advisor

Prof. Joontae Kim
Department of Mathematics, Sogang University
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Relationship: Thesis Committee, Research Mentor