

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, SNU Mar 2013 – Feb 2018

Graduated with Honors

Research Experience

Postdoctoral Researcher

Center for Quantum Structures in Modules and Spaces (QSMS), SNU May 2025 – Present

Postdoctoral Supervisor:

- Research on three-body problem.

Research Institute of Mathematics, SNU

Mar 2025 – Apr 2025

Postdoctoral Supervisor: Prof. Cheol-hyun Cho

- Research on periodic orbits in the three-body problem via symplectic geometry.

Graduate Student Researcher

Department of Mathematics, SNU 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

1. **Conley-Zehnder Indices of Spatial Rotating Kepler Problem** In preparation
 - Description of the moduli space and computing the Conley-Zehnder indices of periodic orbits of spatial rotating Kepler problem.
2. **Fiberwise Convexity of Restricted Three-body Problem** In preparation

with Sunghae Cho and Beomjun Sohn

 - Investigating fiberwise convexity in the restricted three-body problem, relating it to spatial periodic orbits.

3. 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.

4. 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**

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
Department of Mathematics, Seoul National University
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Relationship: Ph.D. Advisor

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