# 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, 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** (Manuscript)
with Beomjun Sohn 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** (Manuscript)
with Sunghae Cho and Beomjun Sohn In preparation

– 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** (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 Supervisor