

Appointment

Aug 2025– **Ritt Assistant Professor**, Columbia University

Education

Jul 2025 **Ph.D. in Mathematics**, Indiana University

○ Advisor: **Prof. Michael Mandell**

Aug 2018 **M.Sc. in Mathematics**, Seoul National University

○ Advisor: **Prof. Otto van Koert**

Aug 2015 **B.Sc. in Engineering**, Korea Aerospace University

Research Interests

Algebraic Topology; Stable homotopy theory, algebraic K-theory, and equivariant algebra with a focus on duality phenomena, real and equivariant refinements, and connections to number theory, combinatorics, and homotopy-theoretic methods meeting complex geometry.

Preprints and Publications

- **K-theoretic Tate-Poitou duality at prime 2**, in *Advances in Mathematics*, 477 (2025), Paper No. 110370, 26 pp.
- **Realizing Compatible Pairs of Transfer Systems by Combinatorial N_∞ -Operads** with D. Chan, D. Mehrle, P. Sanchez Ocal, A. Osorno, B. Szczesny, and P. Verdugo, Preprint, *arXiv:2510.26047*, 2025.
- **Structural invariance of Green-Griffiths-Demailly Thresholds on compact complex orbifolds** with G. Cho. *arXiv:2511.05830*, 2025.

In preparations

- **Homological trace methods for real topological Hochschild homology** with T. Gerhardt, L. Keenan, J. Moreno, J.D. Quigley.
- **Algebraic extension of Tambara functors**

Honors & Awards

- 2025 Outstanding Thesis Award, Indiana University
- 2024–2025 College of Arts and Sciences Dissertation Research Fellowship, Indiana University
- 2019 Robert E. Weber Memorial Award, Indiana University
- 2016 Lecture and Research Scholarship, Seoul National University

Talks

Invited

- Jan 2026 Joint Mathematics Meetings, Special Session on New Voices in Homotopy Theory
- Oct 2025 Texas State University, Topology Seminar
- Jul 2025 Scissors Congruence and K-theory
- Apr 2025 Indiana University, Algebra Seminar
- Mar 2025 AMS 2025 Spring Central Sectional Meeting, Special Session on Homotopy Theory and Algebraic K-Theory
- Oct 2024 Columbia University, Algebraic Topology Seminar
- Oct 2024 University of Virginia, Topology Seminar
- Sep 2024 Indiana University, Topology Seminar
- Sep 2024 Ohio State University, Homotopy Seminar
- Jan 2024 FRG Virtual Seminar

Contributed

- Aug 2024 MathFest 2024, Contributed Session: Advances in Algebraic Topology, Indianapolis
- Nov 2023 BUGCAT Conference, Binghamton University
- Jun 2023 Scissors Congruence, Algebraic K-Theory, and Trace Methods, Indiana University

Teaching

Columbia University

Analysis and Optimization (F2025)

Indiana University

Calculus 3 (TA, F2019, S2022, F2023, S2024)

Calculus 1 (F2022)

Calculus 2 (TA, F2019)

Mathematics of Decision and Beauty (Co-instructor, Su2020, F2020, S2021)

Seoul National University

Calculus I/II – TA (multiple semesters, 2015–2018)

Mentoring

Directed Reading Program (Indiana University)

- Fall 2023 *Exponential Law in Vector Spaces — A Glimpse of the Adjoint Isomorphism Theorem*. Book: J. Rotman, *An Introduction to Homological Algebra*.
- Spring 2023 *Simplicial Homotopy Theory*. Book: P. Goerss and R. Jardine, *Simplicial Homotopy Theory*.
- Fall 2022 *A Ring Structure on Vector Bundles*. Book: M. Aguilar, S. Gitler, C. Prieto, *Algebraic Topology from a Homotopical Viewpoint*.

Service and Organizational Activities

- 2025–2026 Algebraic Topology Seminar, Columbia University
- 2023–2025 Topology Seminar, Indiana University
 - Apr 2025 Graduate Student Topology and Geometry Conference 2025, Indiana University
 - Fall 2023 Reading Seminar on Equivariant Stable Homotopy Theory, Indiana University
 - May 2023 Reading Seminar on Stable Homotopy Theory, Indiana University
 - Fall 2021 Graduate Student Homotopy Theory Seminar, Indiana University
 - Spring 2021 Graduate Student Homotopy Theory Seminar, Indiana University
- 2015–2018 Mathemaniac (Graduate Student Biannual Seminar), Seoul National University

References

- **Michael Mandell**
Department of Mathematics, Indiana University
mmandell@iu.edu
- **Andrew Blumberg**
Department of Mathematics, Columbia University
andrew.blumberg@columbia.edu
- **Ayelet Lindenstrauss**
Department of Mathematics, Indiana University
alindens@iu.edu
- **Vladimir Eiderman** (teaching)
Department of Mathematics, Indiana University
veiderma@iu.edu