

SEHYUN JI | Curriculum Vitae

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Research Interest PDEs, Kinetic equations, Fluid dynamics, Integro-differential equations, Regularity estimate and formation of singularity

Education **University of Chicago** Sep 2020 - Jun 2026
Ph.D. in Mathematics
Advisor: Prof. Luis Silvestre

Seoul National University Mar 2014 - Aug 2020
B.S. in Mathematics, Summa cum laude

Publication

Finite Time Singularities in the Landau equation for very hard potentials, with Jacob Bedrossian, Jiajie Chen, Maria Gualdani, Vlad Vicol, and Jincheng Yang. [arxiv]

Dissipation estimates of the Fisher information for the Landau equation(2024). [arxiv]
To appear in Journal of the European Mathematical Society(JEMS).

Bounds for the optimal constant of the Bakry-Émery Γ_2 criterion inequality for RP^{d-1} (2024). [arxiv]
To appear in Indiana University Mathematics Journal(IUMJ).

Global Existence for an Isotropic Landau Model, with David Bowman (2024). [arxiv].
SIAM J. Math. Anal. 57 (2025), no. 2, 1406–1451.

Local regularity for the space-homogeneous Landau equation with very soft potentials, with François Golse, Cyril Imbert, and Alexis Vasseur. [arxiv] J. Evolution Equations 24 (2024), no. 4, Paper No. 82, 81 pp.

Entropy dissipation estimates for the Landau equation with Coulomb potentials. [arxiv]
Kinetic Related Models 18 (2025), no. 3, 368–388.

Awards

Wirszup Fellowship, University of Chicago 2026

Amick Fellowship, University of Chicago 2020-2024

The Korean Government Scholarship Program for Study Overseas 2020-2022

The Presidential Science Scholarship (Korea Student Aid Foundation) 2014-2019

University Students Contest of Mathematics (Korea), Gold award 2017, 2019

54th International Mathematical Olympiad, Gold medal 2013

Talks

Implosion singularity of the Landau equation with very hard potentials
• PDE/Geometric Analysis Seminar, UW Madison Apr 2026
• Analysis Seminar, ETH Mar 2026
• Student Analysis Seminar, Université Paris-Saclay Mar 2026
• Analysis Seminar, Université Paris Cité Mar 2026

The dissipation estimate of the Fisher information for the Landau equation
• HADES, UC Berkeley Oct 2025
• Analysis seminar, UT Austin Sep 2025
• KDCM seminar, Yonsei University May 2025

- Workshop on Kinetic Theory and Fluids (Poster), UW Madison Mar 2025
- AMS 2025 Spring Sectional Southeastern meeting, Clemson Univ. Mar 2025
- APP seminar, Korea Institute for Advanced Study Nov 2024

The isotropic Landau equation does not blow up
 • Analysis seminar, UT Austin May 2024

**Teaching
 experience**

Lecturer, University of Chicago
 • Math 13100, Elementary Calculus 1 Autumn 2022
 • Math 13200, Elementary Calculus 2 Winter 2023
 • Math 15100, Calculus 1 Autumn 2023
 • Math 15200, Calculus 2 Autumn 2025

College Fellow (TA), University of Chicago
 • Math 27000, Basic Complex Variables Autumn 2021
 • Math 27100, Measure and Integration Winter 2022
 • Math 27500, Basic Theory of PDEs Spring 2022

Grader, University of Chicago
 • Math 31200, Analysis 1 Autumn 2024, 2025
 • Math 31400, Analysis 3 Spring 2024, 2025

Mentor, University of Chicago
 • REU Program Summer 2021
 • Directed Reading Program (DRP) Winter 2023, Spring 2024

Miscellaneous

Citizenship : South Korea
 Languages : Korean (Mother tongue), English (Fluent)
 Mandatory Military Service : Republic of Korea Air Force Feb 2017 - Feb 2019