JAEHYUN WOO

wjhwsh1@snu.ac.kr

1, Gwanak-ro, Gwanak-gu, Seoul, Republic of Korea

https://jaehwoo.github.io/mypage/

EDUCATION

Seoul National University *Mar 2025 - Current*
Ph.D. Student in Mathematics

Seoul National University *Mar 2019 - Feb 2025*
B.S. in Mathematics (minor in chemistry) GPA: 4.16/4.3
Thesis: Restriction Estimates for Hypersurfaces (Advisor: Changkeun Oh)
Leave for Mandatory Military Service: Sep 2022 - Aug 2024

RESEARCH INTERESTS

My research interest is in harmonic analysis and related fields, including number theory and PDEs.

RESEARCH EXPERIENCE

Undergraduate Research Internship, Seoul National University *Sep 2024 - Jan 2025*
"Multilinear Estimates: Broad-narrow Analysis and Induction on Scales" (Advisor: Changkeun Oh)
· Studied the evolution of restriction theory: bush and hairbrush argument for Kakeya type estimates, multilinear estimates, polynomial partitioning method, and induction on scales. Studied the evolution of decoupling theory and its application to analytic number theory.
· Done in tandem with undergraduate thesis.
· Keywords: Restriction inequalities, Decoupling inequalities, multilinear estimates, broad-narrow analysis, induction on scales

Undergraduate Research Internship, Seoul National University *Jun 2022 - Aug 2022*
"Small Scale Formation of 2D Incompressible Euler Equations on a Domain with Smooth Boundary" (Advisor: In-Jee Jeong)
· Showed vorticity gradient growth for a long time in a smooth domain similar to a disc or a strip, by applying the notion of Hausdorff convergence and gamma-convergence to the hyperbolic flow scenario near the boundary
· Keywords: 2D incompressible Euler equations, long time behavior, Green's function for elliptic equations, boundary regularity, Linear and nonlinear advection, Hausdorff convergence, γ-convergence, tubular neighborhood

Undergraduate Research Internship, Seoul National University *Dec 2021 - Feb 2022*
"Global-in-time Gevrey-1/s Regularity of Incompressible Euler Equations on 2D Torus" (Advisor: In-Jee Jeong)
· Studied recent results on inviscid damping, and obtained Gevrey-1/s norm estimates with decreasing radius of analyticity by using paraproduct decomposition, which demonstrates global-in-time Gevrey-1/s regularity
· Keywords: 2D incompressible Euler equations, inviscid damping, long-time behavior, Fourier multiplier, paraproduct decomposition, Gevrey space, radius of analyticity

TEACHING EXPERIENCE

Teaching Assistant, Seoul National University *Mar 2025 - Current*
· Exercise sessions:
· Grading:

Undergraduate Tutoring, Seoul National University   *Mar 2022 - Jun 2022*
Organized exercise sessions in "Basic Mathematics 1"
· Topics: basic single and multivariable calculus, ordinary differential equations and dynamical systems

SKILLS

Programming Languages
· Numerical Analysis with Python and Julia
· Computational Chemistry: GAMESS, ORCA (quantum computations), LAMMPS (classical molecular dynamics)