Jiarong Wu

Email: jiarong.wu@nyu.edu
Website: jiarong-wu.github.io
Address: Warren Weaver Hall 1105A
Phone: (+1) 609-917-8212

Education

Princeton University — Princeton, NJ
Ph.D. in Mechanical and Aerospace Engineering, Advisor: Luc Deike — 2018–2023

Boulder Summer School for Condensed Matter and Materials Physics — Boulder, CO
Hydrodynamics Across Scales — July 2022

Tsinghua University — Beijing, China
B.S. in Mechanical Engineering, GPA: 90.4/100 — 2014 –2018

Research Experience

Courant Institute of Mathematical Sciences — New York, NY
Postdoctoral Research Associate with Prof. Laure Zanna — 2023–current

- Air-sea flux parameterization in climate models with a combination of physics-based and data-driven methods.
- Affliated with LEAP (Learning the Earth with Artificial Intelligence and Physics) center at Columbia University

Laboratory of Physical and Spatial Oceanography (LOPS - Ifremer) — Brest, France
Visiting scholar with Dr. Bertrand Chapron — July - August 2023

- Wind wave characteristics for satellite scatterometer signal retrieval.

Princeton University — Princeton, NJ
Graduate research assistant advised by Prof. Luc Deike — 2018–current

- Thesis: Ocean Wave Dynamics with High Fidelity Numerical Simulations

Tsinghua University, State Key Laboratory of Hydroscience and Engineering — Beijing
Senior thesis advised by Prof. Shuhong Liu — 2017–2018

- Cavitation around a bionic hydrofoil with leading-edge tubercles in high speed water tunnel.

Publications

Peer-reviewed papers

1. **Wu, J.**, Popinet, S., and Deike, L. (2023). Breaking wave field statistics with a multilayer numerical framework. Journal of Fluid Mechanics. DOI: https://doi.org/10.1017/jfm.2023.522
2. **Wu, J.**, Popinet, S., and Deike, L. (2022). Revisiting wind wave growth with fully coupled direct numerical simulations. Journal of Fluid Mechanics. DOI: https://doi.org/10.1017/jfm.2022.822
3. **Wu, J.** and Deike, L. (2021). Wind wave growth in the viscous regime. Physical Review Fluids. DOI: https://doi.org/10.1103/PhysRevFluids.6.094801

Under preparation

1. **Wu, J.**, Popinet, S., and Deike, L.. Breaking induced turbulence generation and dissipation in simulated broadband wave fields.

Scholarships and Awards

- School of Engineering and Applied Science Award for Excellence 2022
- MAE Britt and Eli Harari Fellowship 2021
- Mary and Randall Hack '69 Graduate Award for Water and the Environment 2021
- MAE Second Year Fellowship 2019

Teaching and Mentoring

- **Teaching Assistant** at Princeton University Spring 2023, Fall 2020/2021
  - MAE501 - Methods of Engineering Analysis I
  - ENV330/MAE330 - Ocean Waves
- **Undergrad research mentoring** at Princeton University
  - Lucy Madden, PRISM Summer Program, Summer 2021
  - Sonika Bagchi, Princeton Physics Department Junior and Senior Paper, 2021-2023

Service and Volunteering

- Member of MAE Climate and Inclusion Committee 2019–2022
  Assist survey, office hour, and department-wise open discussion as a graduate student committee member.
- Volunteer at weekly help sessions of Princeton Research Computing (PICSciE) 2022-2023
  Providing technical supports on software engineering, cluster usage, and visualization related questions.

Talks and Presentations

1. **J. Wu**, S. Popinet, and L. Deike, "Breaking wave field statistics with a multilayer numerical framework", Basilisk User Forum, Paris, France, 2023
2. **J. Wu**, S. Popinet, and L. Deike, "Statistics of breaking wave fields with a multilayer numerical framework", APS March Meeting, Las Vegas, NV, 2023
3. **J. Wu**, S. Popinet, and L. Deike, "Breaking wave field statistics with a multilayer numerical framework", APS Division of Fluid Dynamics Meeting, Indianapolis, IN, 2022
4. **J. Wu**, S. Popinet, and L. Deike, "Revisiting wind wave growth with fully-coupled direct numerical simulations", WISE Meeting, Brest, France, 2022
5. **J. Wu**, S. Popinet, and L. Deike, "Fully coupled wind-wave growth: a numerical study", AGU Ocean Sciences Meeting, virtual, 2022
6. **J. Wu** and L. Deike, "Direct Numerical Simulation of Surface Waves and Turbulent Boundary Layer Interaction", APS Division of Fluid Dynamics Meeting, Phoenix, AZ, 2021
7. **J. Wu**, "Numerical Investigation of Wind-wave Interaction ", MAE Research Day, Princeton, 2021
8. **J. Wu** and L. Deike, "Numerical Investigation of Wind-wave Interaction ", 25th International Congress of Theoretical and Applied Mechanics, virtual, 2021
9. **J. Wu** and L. Deike, "Parameterization of Wind Wave Growth Rate, a Direct Numerical Simulation Study", AGU Ocean Sciences Meeting, San Diego, CA, 2020
10. **J. Wu** and L. Deike, "Direct Numerical Simulation of Wind Wave Growth", APS Division of Fluid Dynamics Meeting, Seattle, WA, 2019