RYAN SHÌJIÉ DÙ

The Center for Atmosphere Ocean Science (CAOS)
Courant Institute of Mathematical Sciences, New York University
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EDUCATION

Courant Institute, New York University 2020 - Present
Center for Atmosphere Ocean Science, Courant Institute of Mathematical Sciences
PhD. in Atmosphere Ocean Science and Mathematics
Advisor: Oliver Bühler, Shafer Smith

University of California, Los Angeles 2016 - 2020
B.S. Applied Mathematics (Specializing in Computing); Minor in Philosophy
Honors Program in Applied Mathematics, College Honors Program, summa cum laude

PUBLICATIONS

3. Dù, R.S., Bühler, O. *Domain dependence of wave turbulence theory for the Majda-McLaughlin-Tabak (MMT) model.* In Preparation.

2. Du, R.S., Liu, L., Ng, S., Sambandam, S., Hernandez Adame, B., Perez, H., Ha, K., Falcon, C., de Rutte, J., Di Carlo, D., Bertozzi, A.L., 2021. *Statistical energy minimization theory for systems of drop-carrier particles.* Phys. Rev. E 104, 015109.

1. Lindstrom, M.R., Du, R.S., Ng, X.Y., Diaz, D., Koulikova, M., Nero, M., Ross, H., Shukla, S., Bertozzi, A.L., Brantingham, P.J., 2019. *Using local geographic features to predict changes in the Los Angeles homeless population.* UCLA CAM Reports 19-62

PRESENTATION

3. *SQG^{+1} as a Model for Submesoscale Asymmetry* (Poster)
   at FilaChange 2022, August 2022.

2. *Domain dependence of wave turbulence theory for the Majda-McLaughlin-Tabak (MMT) model* (Poster)
   at the 23rd Conference on Atmospheric and Oceanic Fluid Dynamics (AOFD), June 2022;
   and the 2022 Gordon Conference: Ocean Mixing, June 2022.

1. *Modeling systems of drop carrier particles through energy minimization* (Poster)
   at the 72nd Annual Meeting of the Division of Fluid Dynamics (APS DFD), Nov 2019.

RESEARCH

1D Wave Turbulence. 2021-Present
Graduate Student Researcher *CAOS, Courant Institute, NYU*
Advisor: Oliver Bühler

· Developed and numerically tested a new theory for the turbulent spectra of the Majda-McLaughlin-Tabak (MMT) model.
· Numerical experiments were run on NYU HPC cluster Greene.

Lagrangian Filtering for Mean-Wave Separation. Summer 2021
Graduate Student Researcher *CAOS, Courant Institute, NYU*
Advisor: Shafer Smith

· Tested the technique of Lagrangian Filtering for mean-wave separation of geophysical flows by comparing the algorithm output with theoretically known mean flow.

Modeling Systems of Drop Carrier Particles Through Energy Minimization. 2019-2021
Student Researcher *Applied Math REU Program, UCLA*
Advisor: Andrea Bertozzi, Claudia Falcon

· Studied the properties of Drop Carrier Particles, a new experimental tool in biotechnology, through calculus of variation, probability, and lab experiment.

Predicting Changes in the LA Homeless Population. 2018-2019
Student Researcher *Department of Mathematics, UCLA*
Advisor: Michael Lindstrom

· Constructed machine learning architecture (in Tensorflow) aiming at predicting changes in homeless population in LA from local geographic features.

LEADERSHIP AND SERVICE

NYU SIAM Student Chapter. 2020-Present
Founding Board Member *Courant Institute of Mathematical Sciences, NYU*

· Founded the NYU student Chapter of Society for Industrial and Applied Mathematics (SIAM).
· Organized events that are accessible to both the undergraduate and graduate student bodies of Courant, to enrich their education experience and foster bonds between them.

Planetary Scale Ocean Circulation Course. 2020-2021
Teaching Assistant *World Science Scholars program, World Science Foundation*
Instructor: David Holland

· Assisted in developing and teaching a 3-hours course on the mathematics and physics behind ocean circulations and showcased methods of mathematical analysis, numerical simulation, and lab experiment.
· Conducted "ocean gyres in rotating tank" experiment in Environmental Fluid Dynamics Lab, NYU.

New Student Adviser and New Student Mentor. 2018
New Student & Transition Programs, UCLA

· Advised over 150 new undergraduates in curriculum, student services, and personal issues related to transitioning to university.
· Facilitated group discussions on topics ranging from the academic environment, student diversity, Title IX/sexual violence, alcohol and substance abuse, and sexual health.

TECHNICAL STRENGTHS

Languages	English, Chinese (Mandarin)
Programming Languages	MATLAB, Python (including FEniCS, Tensorflow), C++
Software	LaTeX, Inkscape, Slurm, Qt (in Python and C++), QGIS

WEBSITES

Personal Website	sites.google.com/view/ryan-shijie-du
GitHub	github.com/Empyreal092