RYAN SHÌJIÉ DÙ

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

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

University of California, Los Angeles, B.Sc. Applied Mathematics 2016 - 2020
Specialization in Computing, Minor in Philosophy
Honors Program in Applied Mathematics, College Honors Program, summa cum laude
Mentor: Andrea Bertozzi

PUBLICATIONS

5. Dù, R.S., Smith K.S., 2024. *Emergent vorticity asymmetry of one and two-layer shallow water system captured by a next-order balanced model.* Submitted to Journal of Fluid Mechanics.

4. Dù, R.S., Smith K.S., Bühler, O., 2024. *Next-order balanced model captures submesoscale physics and statistics.* Submitted to Journal of Physical Oceanography.

3. Dù, R.S., Bühler, O., 2023. *The Impact of Frequency Bandwidth on a One-Dimensional Model for Dispersive Wave Turbulence.* J Nonlinear Sci 33, 81.

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.

PRESENTATIONS

6. *Next-order in Rossby SQG^{+1} model for reconstructing velocity from sea surface height*
   eLighting at AGU Annual Meeting (AGU24), December 2024.

5. *Next-order balanced model for shallow water captures vorticity asymmetry*
   Poster at AGU Annual Meeting (AGU24), December 2024.

4. *Next-order balanced model captures submesoscale physics and statistics*
   Talk at AGU Ocean Sciences Meeting (OSM24), February 2024;
   Poster at the Conf. on Atmo. and Oceanic Fluid Dynamics (AOFD24), June 2024.

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 Conf. on Atmo. and Oceanic Fluid Dynamics (AOFD23), June 2022;
   Poster at 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.

AWARDS

- Thomas Tyler Bringley Fellowship, Courant Institute, NYU 2024
  for outstanding work in applied mathematics

MENTORING

- Mentor for Qi Liu 2024
  Undergraduate research at NYU
- Co-mentor for Kai Hung and Daniel Wang 2023
  NYU Applied Math Summer Undergraduate Research Experience (AM-SURE)
- Co-mentor for Andreas Louskos 2023
  Master student thesis at NYU

ACADEMIC AND UNIVERSITY SERVICE

- Peer reviewer for *Geophysical Research Letters (GRL)*
- Program co-coordinator for NYU Applied Math Summer Undergraduate Research Experience (AM-SURE) 2023
- Faculty adviser for the Mathematical Contest in Modeling (MCM) 2023-2024
- Member of the committee on reviewing the results of the Courant PhD. student survey 2024

OUTREACH

- Lecturer at Courant Splash (cSplash) to NYC high school students 2023
- Lecturer at NYU College & Career Lab to rising 8^{th} grade students 2023
- Founding board member of NYU SIAM student chapter 2020-2022
- Teaching assistant of a planetary scale ocean circulation course for the World Science Scholars program, led by Professor David Holland 2020-2021
- New Student Adviser and New Student Mentor at UCLA 2018

TEACHING EXPERIENCES

- Guest lecturer for Columbia's Geophysical Fluid Dynamics course 2024
  on using Dedalus to simulate some classic simple models of GFD
- Teaching Assistant for Undergraduate courses at Courant Institute of Mathematical Sciences, NYU
  Analysis Spring, Fall 2024
  Numerical Analysis Fall 2022, 2023
  Partial Differential Equations Spring 2023
  Introduction to Fluid Dynamics Spring 2023

TECHNICAL STRENGTHS

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

WEBSITES

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