

## Zihua Liu

Postdoctoral Investigator  
Department of Physical Oceanography  
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### Education

- 2020.09, Ph.D. in Applied Mathematics, University College London, London, UK.  
Supervisor: Prof. Roger Grimshaw & Prof. Edward Johnson.
- 2014.06, B.S. in Marine Sciences, Ocean University of China, Qingdao, China.

### Professional experience

- 2022.07- , Postdoctoral Investigator, Woods Hole Oceanographic Institution
- 2020.11- 2022.06, Postdoctoral Scholar, Woods Hole Oceanographic Institution

### Awards

- Weston Howland Jr. Postdoctoral Scholar, WHOI, 2020
- Monica Hulse Scholarship, UCL, 2020
- Roland Schlich Travel Support, EGU, 2018
- UCL PhD Teaching Assistantship, UCL, 2017-2019
- National Academic Base Scholarship for Oceanography, OUC, 2013
- Academic Scholarship, OUC, 2011 & 2013
- Scholarship for Practice, OUC, 2013

### Research interest

Nonlinear waves, with an emphasis on geophysical fluid dynamics. Theoretical and numerical oceanography and a particular interest in internal waves. Fluid-structure interaction.

### Publications

- **Liu, Z.**, Zhang, W. G., and Helfrich, K. R. (2022). Vertical structure of barotropic-to-baroclinic tidal energy conversion on a continental slope. *Journal of Geophysical Research: Oceans*, 127, e2022JC019130.
- **Liu, Z.**, Grimshaw, R., and Johnson, E. (2021). Resonant coupling of mode 1 and mode 2 internal waves by topography. *J. Fluid Mech.*, 908, A2.
- **Liu, Z.**, Grimshaw, R., and Johnson, E. (2019). Generation of mode 2 internal waves by the interaction of mode 1 waves with topography. *J. Fluid Mech.*, 880, 799-830.
- **Liu, Z.**, Grimshaw, R., and Johnson, E. (2019). The interaction of a mode-1 internal solitary wave with a step and the generation of mode-2 waves. *Geophysical & Astrophysical Fluid Dynamics*, 113:4, 327-347.
- **Liu, Z.**, Grimshaw, R., and Johnson, E. (2018). The Effect of a Variable Background

Density Stratification and Current on Oceanic Internal Solitary Waves. *Fluids* 2018, 3, 96.

• **Liu, Z.**, Grimshaw, R., and Johnson, E. (2017). Internal solitary waves propagating through variable background hydrology and currents. *Ocean Modelling*, 116:134-145.

• Grimshaw, R., and **Liu, Z.** (2017). Nonlinear Periodic and Solitary Water Waves on Currents in Shallow Water. *Studies in Applied Mathematics*, 139: 60-77.

## Conferences and Summer Schools

### (1). Summer School

• Fluid Dynamics of Sustainability and the Environment (FDSE), Ecole Polytechnique, France, 2-14 July 2017.

### (2). Conferences

• Poster -- 2018 Ocean Science Meeting; 11-16 February 2018, Portland, Oregon, USA.

• Oral -- 2018 European Geosciences Union (EGU) General Assembly; 8-13 April 2018, Vienna, Austria.

• Oral -- “Nonlinear Waves – Theory, Computation and Real-World Application” , 7-11 January, 2019, Tsinghua - Sanya International Mathematics Forum (TSIMF), Sanya, China.

• PICO -- 2019 European Geosciences Union (EGU) General Assembly; 7-12 April 2019, Vienna, Austria.

• Oral -- 2020 Physical Applied Mathematics and Data Science; 6-10 January 2020, Shanghai, China.

• Oral online -- 2020 European Geosciences Union (EGU) General Assembly; 3-8 May 2020, Online.

• Oral -- 2022 Ocean Science Meeting; 28 February - 4 March 2022, online.

## Teaching/Tutorial (UCL)

• Mathematical Modelling and Analysis I, (Fall, 2018, 2019). Lecture, 100+ undergrads.

• Fluid Mechanics, (Fall, 2018).

Problem class, 100+ undergrads.

• Applied Mathematics I (Fall, 2018) & II (Spring, 2019).

Tutorial, 12 undergrads.

• Methods I (Fall, 2017, 2018) & II (Spring, 2018, 2019).

Tutorial, 12 undergrads.

• Computational Methods (Fall, 2017).

Problem class, 40+ undergrads.