Jinshi (Peter) Chen

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EDUCATION

Woods Hole Oceanographic Institution, Physical Oceanography   Cambridge & Woods Hole, MA
Massachusetts Institute of Technology, Earth, Atmosphere, and Planetary Science   Jun. 2019-Present
Overall GPA: 5.00

Cornell University, College of Arts & Sciences   Ithaca, NY
Physics, Bachelor of Arts, Magna Cum Laude   May 2019
Overall GPA: 4.08 • Major GPA: 4.14

SPECIALIZED SKILLS

Software: MATLAB • OpenFOAM • Dedalus • FLUENT • LabVIEW
Programming language: Python • C/C++ • Julia
Laboratory: Particle Image Velocimetry (PIV) • Laser Induced Fluorescence (LIF) • Raman spectroscopy • Analog & digital circuitry
Field Work: Acoustic Doppler Velocimetry (ADV) • Acoustic Doppler Current Profiler (ADCP) • CTD • Bottom sampling • IFCB

HONORS & AWARDS

• MathWorks Fellowship   Aug. 2023
• Merrill Presidential Scholar   May. 2019
• American Physical Society Division of Fluid Dynamics 2018 student travel grant   Sept. 2018
• Woods Hole Oceanographic Institution Summer Student Fellowship   Jun. 2018-Aug. 2018
• National Marine Figure of the Year 2013 by State Oceanic Administration (SOA), P.R.China   Jun. 2014

AFFILIATIONS

Phi Beta Kappa Honor Society (Mar. 2019-Present) • American Physical Society (Sept. 2018-Present) • American Geophysical Union (Dec. 2022-Present)

RESEARCH GRANT AWARDED

• Ocean Ventures Fund   Jun. 2023
• PADI Foundation Grant   Apr. 2021

FIELD WORKS

SINKEX, Field Research Facility, Duck, NC   Sept. 2023-Oct. 2023
• Deployed vertically aligned ADVs to measure turbulence.
• Assisted mounting field cameras to collect surf zone foam images.

BIASEX, Field Research Facility, Duck, NC   Sept. 2022
• Deployed ADV, ADCP in surf zone.
• Assisted mounting field cameras to collect surf zone foam images.
• Assisted flying drones for remote sensing.

DUNEX, Field Research Facility, Duck, NC   Aug. 2021-Oct. 2021
• Deployed ADV, ADCP and pressure sensors in surf zone.
• Assisted mounting field cameras to collect surf zone foam images.
• Assisted collecting sediment samples.
• Provided daily maintenance for in-situ sensors.

RESEARCH EXPERIENCE

MIT/WHOI Joint Program   Cambridge, MA & Woods Hole, MA
Graduate Student   Advisor: Dr. Britt Raubenheimer   Jun. 2019-Present
• Simulate surf zone wave breaking with random waves and field-based bathymetry using *OpenFOAM*.
• Numerically estimate wave roller energy and momentum.
• Numerically investigate wave roller parametrization.
• Collect undertow data using ADCP at Duck, NC.
• Compare the numerical result against Duck94 field data.
• Derive undertow parametrization based on model, field data, and theory on turbulence advection & diffusion.
• Present results at AGU 2022 Fall Meeting

MIT/WHOI Joint Program   Cambridge, MA & Woods Hole, MA
Graduate Student   Advisor: Dr. Glenn Flierl   Dec. 2020-Present
• Simulate random vortex generation and advection over a slope using *Dedalus* framework.
• Derive dimensionless relation between vortex properties (energy, size, etc) and slope & bathymetry properties.
• Explore possible critical transitions of vortex advection using simplified vortex dipole advection model.

Applied Ocean Physics & Engineering, Woods Hole Oceanographic Institution   Woods Hole, MA
Summer Student Fellow   Advisor: Dr. Britt Raubenheimer   Jun. 2018-Aug. 2018
• Investigated the significance of wind effect and turbulent mixing on the setup and alongshore flows.
• Programmed surfzone setup and alongshore flow models.
• Compared modeled results with observations at Duck, NC, during the passage of Hurricane Matthew in 2016.
• Conducted CTD casts and bottom sampling at Martha's Vineyard, MA.

PRESENTATIONS

• Chen, J., Trowbridge, J., Raubenheimer, B., & Elgar, S. (2024, February). *Observation of Surfzone Turbulence Anisotropy*. Presented at 2024 Ocean Sciences Meeting.
• Chen, J., Raubenheimer, B., & Elgar, S. (2023, August). *Tidal Effect of Cross-shore Roller Transformation over Barred Bathymetries*. Presented at 2023 Young Coastal Scientists and Engineers Conference-Americas.
• Chen, J., Raubenheimer, B., & Elgar, S. (2022, December). *Cross-shore Roller Transformation over Barred Bathymetries*. Presented at 2022 AGU Fall Meeting.
• Chen, J., Raubenheimer, B., & Elgar, S. (2021, August). *Simulations and Observations of Surfzone Waves and Undertow*. Presented at Coastal Ocean Fluid Dynamics Laboratory (COFDL) talk.
• Chen, J., Raubenheimer, B., & Elgar, S. (2018, November). *Surfzone Setup and Alongshore Currents During Hurricane Matthew.* Poster presented at 71st Annual Meeting of the APS Division of Fluid Dynamics.

MENTORING & TEACHING

Grad Teaching Development Tracks, MIT   Cambridge, MA
• Develop teaching skills through interactive learning and literature.   Nov. 2022-Feb. 2024

Department of Physics, Cornell University   Ithaca, NY
Peer Advisor   Aug. 2017-Dec. 2017
• Mentored six incoming freshmen on physics course selections and finding research projects.

Department of Physics, Cornell University   Ithaca, NY
Undergraduate Teaching Assistant   Feb. 2016-May. 2016
• Held discussion sessions with a graduate teaching assistant for PHYS 1112: Mechanics & Heat. Answered questions and conducted discussion materials.

ADDITIONAL EXPERIENCE

• **Guest Student,** Woods Hole Oceanographic Institution, Woods Hole, MA   Jul. 2016-Aug.2016
• **Leading Student Researcher on Cyanobacteria,** TsingHua University, Beijing, China   Sept. 2013-Aug. 2014

CERTIFICATION

• **Scientific Diver,** American Academy of Underwater Sciences   Jul. 2021-Present
• **Basic Keelboat,** The United States Sailing Association   Aug. 2018-Present