Gabrielle Hobson

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EDUCATION

Scripps Institution of Oceanography at UCSD　　　　　　　　Expected 2026
Graduate Student, Institute of Geophysics and Planetary Physics

University of North Carolina at Chapel Hill　　　　　　　　May 2020
Bachelor of Science in Applied Mathematics with Honors
Minors in Marine Sciences and Statistics
Overall GPA: 3.6　　Major GPA: 3.5

HONORS AND AWARDS

UNC Chapel Hill, Graduation with Honors and Distinction, 2020

First place, student poster competition, APS Division of Fluid Dynamics Conference 2019, for 'Dynamics of Pulsing Soft Corals' (Gabrielle Hobson, Laura A. Miller, Shilpa Khatri)

Gillian T. Cell Senior Thesis Research Award, $500, Fall 2019 – Spring 2020

Dean's List, UNC Chapel Hill, (6 out of 8 semesters)

RESEARCH INTERESTS

Geophysics ● Fluid Dynamics ● Numerical Methods ● Scientific Computing ● Mathematical Biology

RESEARCH EXPERIENCE

UNC Applied Math and Marine Sciences Fluids Lab　　　　January 2018 – Present
- Conducted Honors Thesis research guided by Prof. Richard McLaughlin and Prof. Roberto Camassa
- Developed theoretical results for the flow in an isosceles triangle capillary using conformal mapping and Green's functions.
- Set up a small-scale fluid dynamics experiment, calibrated equipment, and followed detailed experimental procedures
- Collected photographic data to model Taylor dispersion over time of a passive tracer (fluorescein dye) in triangular and elliptical glass capillaries, under specific laminar flow conditions
- Implemented methods to improve experimental data quality and conducted consistent, repeatable experiments

- Manuscript in preparation for December 2020 submission to *Physical Review Fluids* (Bernardi, Hobson, Camassa, McLaughlin. Passive tracers transport in pipes with triangular and smooth cross sections.)

UC Merced – Khatri Lab, Applied Math Group   May 2019 – Present

- Ran IBFE (Immersed Boundary Finite Element) simulations on the MERCED computing cluster to model the flow generated by a pulsing soft coral across varying parameters
- Developed Python code to automate visualization and analysis of simulation data in VisIt (LLNL)
- Investigated methods to quantify applied forces and mixing efficiency
- Presented results at APS Division of Fluid Dynamics Conference in November 2019, won 1st prize in student poster competition for 'Dynamics of Pulsing Soft Corals', (Gabrielle Hobson, Laura A. Miller, Shilpa Khatri)
- Manuscript in preparation for submission to the *Journal of Fluid Mechanics* (Khatri, Hobson, Santiago, Miller).

PROFESSIONAL EXPERIENCE

VF Corporation – World HQ, Greensboro NC   May - August 2018
Intern, Data Analytics & Insights

- Analyzed data and created visualizations to inform and improve decision making across VF
- Developed extensive skills with data cleaning, analytics and visualization in Excel and Tableau
- Created monthly & quarterly data visualizations and reports in Tableau for leaders and company-wide distribution
- Built unique data cleaning and filtering tool in Excel VBA to improve data quality and efficiency
- Regularly presented project results to senior leaders
- Participated in the Greensboro Fellows Program and Center for Creative Leadership training

Triad Stage – Professional Nonprofit Theatre, Greensboro, NC   May - August 2016
Intern, Data Analytics

- Categorized and streamlined data gathered through a WolfBrown Intrinsic Impact survey that examined the impact of theater productions on individuals and the community
- Investigated trends and anomalies to determine patterns and areas with the potential for growth
- Presented a detailed report of findings and recommendations at Triad Stage's quarterly board meeting

PUBLICATIONS

G. Hobson, *Evolution of a Passive Tracer in Capillaries with Triangular Cross-Sectional Geometries*, Honors Thesis, Dept. of Mathematics, University of North Carolina at Chapel Hill, 2020

PRESENTATIONS

G. Hobson, L. A. Miller, S. Khatri, *Dynamics of Pulsing Soft Corals*, Poster presentation, APS Division of Fluid Dynamics Conference 2019

RELEVANT COURSEWORK

- Partial Differential Equations
- Complex Variables
- Numerical Analysis
- Scientific Computation (ODE, PDE, Linear Algebra)
- Nonlinear Dynamics
- Statistics – Probability; Data Models and Inference
- Fluid Dynamics
- Physical Oceanography
- Environmental Systems Modeling
- Estuarine & Coastal Marine Science
- Differential Equations; Linear Algebra; Analysis

TECHNICAL SKILLS

- MATLAB
- Python
- IBAMR Simulations
- VisIt (LLNL Scientific Visualization)
- Unix for simulations on cluster computing
- Wolfram Mathematica
- LaTeX
- Excel, Visual Basic for Applications
- Tableau Data Visualization
- Adobe Photoshop

PROFESSIONAL AFFILIATIONS

Association for Women in Mathematics

American Physical Society, Division of Fluid Dynamics