

2025 Research Symposium on Environmental and Applied Fluid Dynamics

Tuesday, May 27th, 2025

The George Washington University, Lehman Auditorium (B1220), Science and Engineering Hall

The George Washington University, Washington, DC, 20052

8:45 am – 9:15 am	CONTINENTAL BREAKFAST AND WELCOME – Professor Mike W. Plesniak (Chair, Mechanical & Aerospace Engineering)
9:15 am – 10:00 am	Keynote Lecture: Prof. Deep Ray (University of Maryland) “Learning Enhancements to Flow Solvers: A Synergistic Approach”
TECHNICAL SESSION I – Session Chair: M. Yaper (The George Washington University)	
10:05 am – 10:25 am	Swarup Kumar Subudhi (University of Maryland): Capillary-Force-Defying Exit and Entry of Nanoparticle-Aggregates from and to a Magnetic Drop” (Prof. Siddhartha Das)
10:25 am – 10:45 am	Nero Tyagi (The George Washington University): “Design and Analysis of Cross-Flow Filtration Mechanisms to Collect Oceanic Organic Particles” (Prof. Matthew Rau)
10:45 am – 11:05 am	Haoqian Wang (The George Washington University): “Trajectories of Interacting Viscous Drops in a Shear-Thinning Viscous and Viscoelastic Media” (Prof. Kausik Sarkar)
11:05 am – 11:15 am	COFFEE BREAK
TECHNICAL SESSION II – Session Chair: S. Bera (The George Washington University)	
11:15 am – 11:35 am	Daniel Hunter (The George Washington University): “Ultrafast Imaging of High Void Fraction Bubbly Flows” (Prof. Philippe Bardet)
11:35 am – 11:55 am	Shiyong Tan (Johns Hopkins University): Bubble Coalescence in 3D Turbulence” (Prof. Rui Ni)
11:55 am – 12:15 pm	Ji Zhou (Johns Hopkins University): “Hydrodynamically Beneficial School Configurations in Carangiform Swimmers: Insights from a Flow-Physics Informed Model” (Prof. Rajat Mittal)
12:15 pm – 12:35 pm	Zhihua Zheng (University of Maryland): “Boundary Layer Turbulence at Upper Ocean Submesoscale Fronts” (Prof. Jacob Wenegrat)
12:35 pm – 12:40 pm	Prof. Azar Panah: Fluids and Art @ GWU overview
12:40 pm – 1:45 pm	LUNCH BREAK
TECHNICAL SESSION III – Session Chair: T. Boulaefentis (The George Washington University)	
1:45 pm – 2:05 pm	Manuel Ayala (Johns Hopkins University): “Surface Wave-Aerodynamic Roughness Length Model for Air-Sea Interactions” (Profs. Charles Meneveau & Dennice Gayme)
2:05 pm – 2:25 pm	Sam DiPasqua (University of Maryland): “Observation Data Enriched Enhanced Wind-Driven Ocean Wave Models” (Prof. Kayo Ide)
2:25 pm – 2:45 pm	Md Badrul Hasan (University of Maryland Baltimore County): “Invariance-Embedded Machine Learning Sub-Grid-Scale Stress Models for Meso-Scale Hurricane Boundary Layer Simulations” (Profs. Meilin Yu & Tim Oates)
2:45 pm – 3:05 pm	Samarpan Chakraborty (University of Maryland): “Freak Ocean Waves: A Data-Driven Analysis” (Prof. Bala Balachandran)
3:05 pm – 3:15 pm	AFTERNOON BREAK
TECHNICAL SESSION IV – Session Chair: E. Florou (The George Washington University)	
3:15 pm – 3:35 pm	Tianrui Xiang (Johns Hopkins University): “The Origin of Vorticity in Viscous Incompressible Flows” (Prof. Tamer Zaki)
3:35 pm – 3:55 pm	Connor Klauss (University of Maryland): “An Exploration into Phononic Subsurfaces for the use of High-Speed Boundary Layer Transition Control” (Prof. Christoph Brehm)
3:55 pm – 4:15 pm	Deepan Sharma (Johns Hopkins University): “Three-Dimensional Velocity Measurements around a Roughness Element in the Inner Part of a Rough-Wall Turbulent Boundary Layer” (Prof. Joe Katz)
4:15 pm – 4:35 pm	N. Beratlis (The George Washington University): “The Interaction of Soft Fouling with Turbulent Boundary Layers” (Prof. Elias Balaras)
4:35 pm – 6:00 pm	CLOSING RECEPTION

(Faculty Advisors indicated in parentheses)