THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

Mathematics Colloquium

Thursday, October 3, 2024
3:30–4:30 p.m.
Phillips Hall 332

Research at UNC's Physical Mathematics Laboratory

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Abstract. In this talk, I will provide an overview of the research conducted at UNC's Physical Mathematics Laboratory (PML). Our work lies at the intersection of applied mathematics, physics, and engineering, with the goal of achieving a mechanistic understanding of fundamental physical phenomena in fluid mechanics and soft matter. We are driven by a variety of objectives, including the development of hydrodynamic quantum analogs that push the boundaries between classical and quantum mechanics, the investigation of parametric instabilities and their potential to generate self-propulsion, and the study of wave dynamics in active matter systems. A crucial aspect of our interdisciplinary approach is the integration of first-principles theory and simulations with in-house experiments.