



# The Burgers Program for Fluid Dynamics Twenty Third Annual Symposium

Friday, October 2nd, 2026, 1:00 to 6:00 pm  
AJC Forum (Room 1101), James Clark Hall (Building 429)  
University of Maryland, College Park, MD

Institute for Physical Science and Technology  
College of Computer, Mathematical and Natural Science and the  
A. James Clark School of Engineering  
University of Maryland, College Park

## Program:

- 1:00 – 1:05 **Welcoming Remarks**, James Duncan,  
Director of the Burgers Program for Fluid Dynamics, Department of Mechanical Engineering and the  
Institute for Physical Science and Technology, University of Maryland.
- 1:05 – 1:50 ***Birds, Bats and Robots: Adventures in Flapping Flight Fluid Mechanics.***  
Kenny Breuer  
School of Engineering, Brown University  
<https://engineering.brown.edu/people/kenneth-breuer>
- 1:50 – 2:15 **Break, informal discussions**
- 2:15 – 3:00 ***Wave Interactions and Instabilities in Fluid Discs Around Stars and Black Holes.***  
Gordon Ogilvie  
Department of Applied Mathematics and Theoretical Physics, Cambridge University.  
<https://www.damtp.cam.ac.uk/user/gio10/>
- 3:00 – 3:45 **Graduate student and post-doctoral poster session. Refreshments served.**
- 3:45 – 4:30 ***Don't Get Stuck: The Physics of Suspension Clogging.***  
Alban Sauret  
Department of Mechanical Engineering, University of Maryland  
<https://me.umd.edu/clark/faculty/1918/Alban-Sauret>
- 4:30 – 6:00 ***Reception and Announcement of Best Posters***

## ABSTRACTS and BIOGRAPHIES

### Kenny Bruer

**Abstract:** Who amongst us has not marveled at birds flying in formation or wondered how they achieve the amazing flight performance. While we humans have been flying for a century or so, insects, birds and bats have ruled the skies for over 300 million years, and we are just beginning to understand some of the secrets that have enabled them to move with such elegance, economy, and agility. In this talk I will outline some of the work in my lab on fluid mechanics inspired by flying animals and describe some of our experiments and theories that characterize and model flapping flight. I will draw from recent work with live birds and bats as well as a series of engineered flapping-wing robots. I will focus on both experiments that characterize and quantify live animal flight, as well as on experiments that use bio-inspired robotic systems that allow us to probe nature's secrets in a controlled manner.

**Biography:** Kenny Bruer received his Sc.B. from Brown University in Mechanical Engineering (1982) and his Ph.D. from MIT in Aeronautics and Astronautics (1988). He spent two years back at Brown as a Post Doctoral Fellow in Applied Mathematics and nine years on the faculty at MIT, before finally returning to Brown in 1999, where he is currently Professor of Engineering. In 2010 he received a courtesy appointment as Professor of Ecology, Evolution and Organismal Biology. From 2011 to 2014 he served as Senior Associate Dean of Engineering for Academic Programs.

Professor Bruer's research interests are in the broad field of Fluid Dynamics and cover a wide range of diverse topics. At the macro-scale, he has worked on the mechanics of animal flight, the formation, growth and unsteady dynamics of vortical flows, flow interactions with highly compliant structures such as membrane wings and spring-mounted wings, and energy harvesting from fluid flows. At the micron-scale, he was a pioneer in the mechanics of bacterial motility and flagellar mechanics, the nanoscale flow near a moving contact line and in the development of nanoscale velocimetry techniques. With his students and collaborators, he has co-authored over one hundred peer-reviewed articles in scientific journals, review articles and book chapters. He is the editor of *Microscale Diagnostic Techniques* (Springer, 2004). Professor Bruer has received a number of honors and awards including Fellow of the American Society of Mechanical Engineers (2013), Fellow of the American Physical Society (2010), Associate Fellow of the American Institute of Aeronautics and Astronautics (2013), Chair of the APS-Division of Fluid Dynamics (2012), National Merit Scholar (1978), ONR Graduate Fellowship (1982-7). He was selected as the Midwest Mechanics lecturer in 2008, and was the Paris Sciences Professor at ESPCI in 2015.

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### Gordon Ogilvie

**Abstract:** Astrophysical discs are natural rotating shear flows dominated by orbital motion. They include protoplanetary discs of dusty gas around young stars, in which planets are formed, as well as high-energy accretion discs of magnetized plasma around black holes and compact stars. Astrophysical discs support a wide variety of fluid wave modes, including internal waves analogous to those in the Earth's ocean and atmosphere, which can be excited by tidal forcing or instability. Part of this talk will focus on eccentric discs in which the dominant flow is elliptical Keplerian motion, as has been found to be important in discs within and around binary stars and binary black holes, as well as in protoplanetary systems. Making some use of some quantum analogies, I will discuss the propagation and trapping of fluid wave modes in both Newtonian and relativistic discs and their nonlinear interactions, including parametric instability and the excitation of high-frequency oscillations around black holes.

**Biography:** Gordon Ogilvie is Professor of Mathematical Astrophysics in the Department of Applied Mathematics and Theoretical Physics at the University of Cambridge, where he is the Convenor of the Astrophysics research theme. He is also a Fellow of Clare College, where he teaches students in Natural Sciences and Mathematics. He previously held a Royal Society University Research Fellowship at the Institute of Astronomy in Cambridge, where he had completed his PhD; he also worked in Germany and the USA during his postdoctoral years. His research interests include astrophysical fluid dynamics and magnetohydrodynamics in discs around stars and black holes as well as stellar interiors, with common themes including waves, tides, resonances, instabilities and magnetic fields. He enjoys using mathematical and numerical methods to understand physical processes in these systems.

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## Alban Sauret

**Abstract:** From printer nozzles to aquifers and medical devices, clogging disrupts flows of particulate suspensions across a wide range of scales. It occurs when particles are too large, too concentrated, or too sticky to pass through confined geometries. In this talk, we will discuss how and why flowing stuff gets stuck, highlighting the different clogging mechanisms and our recent efforts to characterize, model, and prevent (or at least delay) them. Combining experiments and physical models, we explore how particle properties and flow conditions govern clog formation and suggest ways to design more reliable fluidic systems.

**Biography:** Alban Sauret is an Associate Professor and Clark Faculty Fellow in Mechanical Engineering at the University of Maryland, College Park. He joined Maryland in 2025 after holding positions at CNRS in France and UC Santa Barbara. His group combines experiments and modeling to study fluid mechanics, soft matter, and granular materials, with applications in manufacturing, industrial processes, and geosciences.