

Johns Hopkins University

Center for Environmental & Applied Fluid Mechanics

3:00 PM, Friday, April 17, 2026

Gilman Hall 50

Zoom: <https://wse.zoom.us/j/93762992307>

[Link for Spring 2026 recordings](#)



Prof. Maziar S. Hemati

Department of Aerospace Engineering and Mechanics
University of Minnesota

“Controlling Flow Interactions to Improve Performance in Aerodynamic Systems”

Abstract: Flow control is the notion of manipulating the evolution of a fluid flow to achieve a desired outcome using passive or active means. Flow control technologies can enhance performance and efficiency in engineering systems, ranging from airplanes to underwater robots to wind turbines. Ongoing efforts aim to improve the reliability and performance of these systems by “feeding back” sensed information about the evolution of a flow to determine how to actuate the flow in an optimal manner. Achieving effective flow control often requires reliable and efficient models for the complex dynamics of fluid flows; estimators that can infer knowledge about the evolution of these flows from a limited set of sensor measurements; and control policies and algorithms that use these inferences to actively and reliably manipulate the evolution of fluid flows to achieve specified performance objectives. This talk will provide an overview of past and ongoing research related to the various modeling, analysis, and design challenges associated with controlling flow interactions in aerodynamic systems. Focus will be given to how control theory, system dynamics, optimization, and applied mathematics can be used to reveal essential flow interactions and harness them to achieve a performance benefit.

For more details, visit: <https://cse.umn.edu/aem/maziar-s-hemati>

Hosted by: Prof. Dennice Gayme (MechE)