

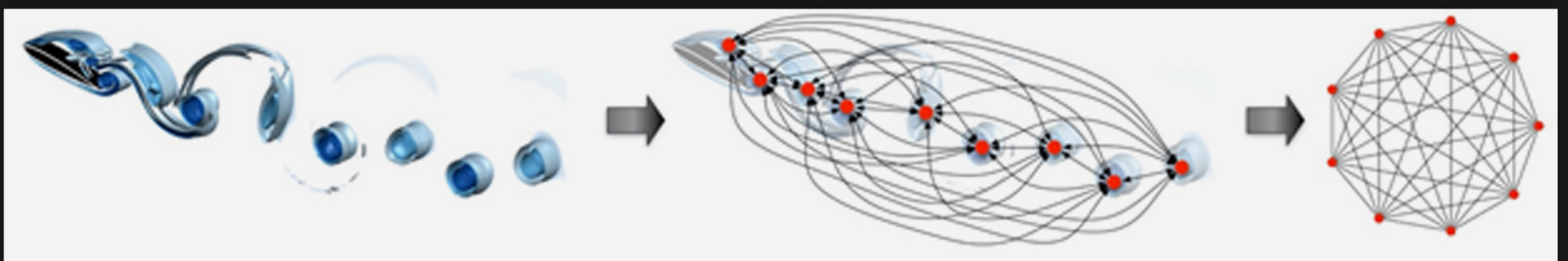


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## *Network-Based Characterization, Modeling, and Control of Fluid Flows*

The network of interactions in a sea of vortices gives rise to the amazingly rich dynamics of fluid flows. To describe these interactions, we consider the use of mathematical tools from the emerging field of network science that is comprised of graph theory, dynamical systems, data science, and control theory. In this presentation, we discuss ways to describe unsteady fluid flows with vortical-interaction, modal-interaction, and probability-transition networks. The insights gained from these formulations are used to characterize, model, and control laminar and turbulent flows. We will also discuss some of the challenges of applying network based techniques to fluid flows and the prospects of addressing them through data-inspired techniques.



Virtual Colloquium

3:30 to 4:30 p.m. Eastern Time (U.S. and Canada)

Wednesday, October 14, 2020