1139-35-699 **Mimi Dai*** (`mdai@uic.edu`) and **Alexey Cheskidov**. *Determining modes for the Navier-Stokes equation.*

In this talk we review classical results on determining modes for fluid equations and present a slightly different approach where we start with a time-dependent determining wavenumber defined for each individual trajectory and then study its dependence on the force. While in some cases this wavenumber has a uniform upper bound, it may blow up when the equation is supercritical. A bound on the determining wavenumber provides determining modes, which in some sense measure the number of degrees of freedom of the flow, or resolution needed to describe a solution. For the 3D Navier-Stokes equations, we obtain a uniform bound on the time average of this wavenumber, which we estimate in terms of the Kolmogorov dissipation number and Grashof constant. (Received February 21, 2018)