1147-35-532 **Elizabeth Carlson**, **Joshua Hudson** (alarios@unl.edu) and **Adam Larios*** (alarios@unl.edu). *Parameter Recovery in the Navier-Stokes Equations via Continuous Data Assimilation.*

In accurately simulating turbulent flows, two major difficulties arise before the simulation begins; namely the problem of determining the initial state of the flow, and the problem of estimating the parameters. Data assimilation helps to resolve the first problem by eliminating the need for complete knowledge of the initial state. It incorporates incoming data into the equations, driving the simulation to the correct solution. Recently, a promising new data assimilation algorithm (the AOT algorithm) has been proposed by Azoani, Olson, and Titi, which uses a feedback control term to incorporate observations at the PDE level. This talk is focused on using the AOT algorithm to resolving the second problem of parameter estimation. Namely, using only measurements of the flow, we propose a new algorithm to be run in tandem with the AOT algorithm to estimate the fluid viscosity (equivalently, Reynolds number) on the fly. We will present this algorithm, theorems realted to its analysis, and also possible applications to subgrid scale modeling. (Received January 25, 2019)