1077-35-666 **Irena Lasiecka** (il2v@virginia.edu), Department of Mathematics, University of Virginia, Charlottesville, VA 22901, and **Yongjin Lu*** (yl7m@virginia.edu), Department of Mathematics, University of Virginia, Charlottesville, VA 22901. *"Uniform decays of energy and blow up of steady states in unstable systems arising in fluid structure interactions".*

Fluid structure interaction comprising of Navier Stokes equation coupled to a dynamic system of elasticity is considered. It will be shown that under some geometric conditions related to partial flatness of the elastic domain the energy (kinetic and potential) associated with the model tends to zero when $t \to \infty$. Since the energy does not provide full topological measure for the state, there are unstable equilibria which lead to solutions blowing up to infinity when $t \to \infty$. In order to counteract this phenomena a boundary feedback in the form of porous force acting on the interface is introduced.

In this talk we shall discuss effectiveness of this feedback in forcing uniform decays of both *the energy* and the *full state*. It will be shown, in particular, that a pure porous force applied on the interface will provide uniform decay of the energy but not of the state. Unstable equilibria (in the annihilator of the energy) still persist. Elimination of the latter is achieved by applying an additional static boundary feedback. (Received September 09, 2011)