1078-35-5 **Vincent Ervin**, **William Layton** and **Monika Neda*** (monika.neda@unlv.edu). *Numerical analysis and computations of filter based stabilization for Navier-Stokes equations.*

We consider filter based stabilization for the Navier-Stokes equations. The first method we consider is to advance in time one time step by a given method and then to apply an (uncoupled and modular) filter to get the approximation at the new time level. This filter based stabilization, although algorithmically appealing, is viewed in the literature as introducing far too much numerical dissipation to achieve a quality approximate solution. We show that this is indeed the case. We then consider a modification: Evolve one time step, Filter, Deconvolve then Relax to get the approximation at the new time step. We give a precise finite element analysis of the numerical diffusion and error in this process and show it has great promise, confirmed in several numerical benchmark problems. (Received July 13, 2011)