1090-35-330 **Thomas J Clark*** (s-tclark15@math.unl.edu) and **George Avalos**. *Wellposedness and Stability of a PDE Model Arising in a 3D Fluid-Structure Interaction.*

We will present qualitative results on a partial differential equation (PDE) model of certain fluid-structure dynamics. Wellposedness of this model is established by means of establishing a nonstandard semigroup generator representation of the operator; this representation is ultimately enabled by an appropriate elimination of the pressure. The coupled PDE model involves the Stokes system which evolves on a three dimensional domain $\mathcal{O}$ being coupled to a fourth order plate equation, with rotational inertia parameter γ, which evolves on a flat portion Ω of the boundary of $\mathcal{O}$. The coupling is implemented via the Dirichlet trace of the Stokes system fluid variable - so the no-slip condition is necessarily not in play - and via the boundary trace of the pressure, which essentially acts as a forcing term on the elastic portion of the boundary. We note here that inasmuch as the Stokes fluid velocity does not vanish on $\partial\mathcal{O}$, the pressure variable cannot be eliminated by the classic Leray Projector. (Received March 04, 2013)