1038-35-107 **George Avalos*** (gavalos@math.unl.edu), Department of Mathematics, University of Nebraska-Lincoln, Lincoln, NE 68588. *Wellposedness and stability theory for a PDE which governs fluid-structure interactions.*

Results of wellposedness and stability are presented for a partial differential equation (PDE) model which has been used to model certain biological and physical fluid-structure interactions. The explicit composition of the fluid-structure PDE is as follows: The Stokes equations are in play, so as to mathematically describe the fluid flow field. Moreover, the Lame's system of elasticity is invoked in order to describe the displacement of the structural body. The coupling between the fluid and structural equations occurs across the boundary interface. A key feature in the analysis is the novel method of eliminating the associated pressure of the system: Because of the nature of the boundary coupling between fluid and structure, the famed Leray Projector, classically applied to "no-slip" fluid boundary conditions, cannot be used in the present situation so as to eliminate pressure. Instead, we recover the pressure explicitly, as the solution of an associated boundary value problem. This is joint work with Roberto Triggiani. (Received February 02, 2008)