1063-74-142 **Emine Yasemen Kaya*** (yasemen.kaya@ttu.edu), 6302 Elgin Ave #276, Lubbock, TX 79413, and **Eugenio Aulisa** and **Akif Ibraguimov**. *Dynamics and stability of the non-linear model for fluid coupling with 1-D beam of changing thickness and 2-D plate.*

In this work we consider the dynamical response of a non-linear beam with viscous damping, perturbed in both the vertical and axial directions interacting with a potential flow.The system is modeled using non-linear momentum equations for the axial and transverse displacements coupled with the fluid flow subjected to the potential law. In particular we show that for a class of boundary conditions (beam clamped at the extremes and specifi ed velocity inlet for the fluid flow) there exists an appropriate energy norm depending on the beam displacements and the potential flow, which is bounded by the incoming boundary condition in the liquid region. Some preliminary results for dynamics of non-linear plate oscillation in the presence of damping coefficients will be also presented. (Received August 14, 2010)