1046-65-66   **Sarah Minerva Venuti*** (`swelling@gmu.edu`), 4400 University Drive, Mathematical Sciences, George Mason University, Fairfax, VA 22030, and **Kevin Kelbaugh** and **Padmanabhan Seshayer** (`pseshaiy@gmu.edu`). *Mathematical modeling, analysis and computation of a fluid-structure interaction problem with applications.* Preliminary report.

In this work, we consider the mathematical modeling and analysis of a fluid-structure interaction problem. The associated partial differential equations for the fluid which is coupled through the boundary with an elastic structure are studied using the finite element methods. Both linear as well as nonlinear (geometric and material) models will be considered in this study. Stability and convergence of the numerical methods employed will be presented. The numerical solutions will be compared against exact solutions that will be obtained using analytical tools such as Laplace Transforms. The mathematical tools presented in this multidisciplinary project can be extended to understand and get a better insight to problems in the areas of medicine and aerospace. (Received July 18, 2008)