1056-35-1617   **Avis A Foster*** (`afoster9@gmu.edu`), 4400 University Dr., STI, Department of Mathematical Sciences, George Mason University, Fairfax, VA 22030, and **Daniel M Anderson**, **S. Minerva Venuti** and **Padmanabhan Seshaiyer**. *Numerical Modeling and Analysis of Fluid Structure Interaction in Biological Systems.* Preliminary report.

This research work expands on an analytical solution for a mathematical model of blood flow through an artery, and the blood's interaction with the arterial wall and the surrounding cerebral spinal fluid. A mathematical model is developed using a wave equation and boundary conditions derived from a combination of Fourier series, a spring-mass equation, and a simplified Navier-Stokes Equation. The coupled system is solved via a method of lines numerical approach that predicts the mechanics of the arterial wall. The resultant model was validated against the analytical solution and analyzed for application to cerebral brain aneurysms. Influence of various model parameters is also investigated. (Received September 22, 2009)