1083-65-228 **Boyce E. Griffith*** (boyce.griffith@nyumc.org), Leon H. Division of Cardiology, Smilow Research Building 8th Floor, 550 First Avenue, New York, NY 10016. *An approach to using finite element mechanics models with the immersed boundary method.*

The immersed boundary (IB) method is a framework for modeling systems in which an elastic structure is immersed in a viscous incompressible fluid. The IB formulation of such problems describes the elasticity of the structure in Lagrangian form and describes the momentum, viscosity, and incompressibility of the fluid-structure system in Eulerian form. Interactions between Lagrangian and Eulerian variables are mediated by integral transforms with delta function kernels. When discretized, the Lagrangian equations are approximated on a curvilinear mesh, the Eulerian equations are approximated on a Cartesian grid, and a regularized version of the delta function is used in approximations to the Lagrangian-Eulerian interaction equations. This talk will focus on a describing a version of the IB method that allows us to discretize the structure via standard Lagrangian finite element (FE) methods. A key feature of our numerical scheme that we shall highlight is that it enables the use of Lagrangian meshes with mesh spacings that are independent of the grid spacing of the background Eulerian grid. Results from computational experiments will be presented. (Received August 28, 2012)