1046-65-97    **Padmanabhan Seshaiyer\*** (`pseshaiy@gmu.edu`), Mathematical Sciences, MS:3F2, 4400 University Drive, Science and Tech I, George Mason University, Fairfax, VA 22030, and **Eugenio Aulisa** and **Sandro Manservisi**. *Computational Methods for fluid-structure interaction problems.*

In this talk, we will present a robust multilevel computational methodology to study the behavior of a fully coupled fluid-structure interaction problem. The method relies on the domain decomposition characteristics of multigrid Vanka solvers, which decompose the complex global domain into finite element local sub-domains and then the global solution is computed iteratively. The method employs multigrid projection and restriction operators that are used to impose the matching between the extended fluid and solid velocity field. Stability and convergence of the proposed methodology will be investigated and presented. The numerical implementation on a multiprocessor architecture results in a straightforward and flexible algorithm. Numerical computations will be presented to validate the performance of the method for benchmark applications involving fluid-strucutre interaction. (Received July 22, 2008)