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**Xiao-Chuan Cai\*** ([cai@cs.colorado.edu](mailto:cai@cs.colorado.edu)), Department of Computer Science, University of Colorado at Boulder, Boulder, CO 80309. *Parallel Fluid-Structure Interaction Algorithms for Simulation of Blood Flow in Artery.*

We discuss a parallel domain decomposition algorithm for the simulation of blood flows in compliant arteries using a fully coupled system of nonlinear partial differential equations consisting of a linear elasticity equation and the incompressible Navier-Stokes equations. The system is discretized with a finite element method on unstructured moving meshes and solved by a Newton-Krylov algorithm preconditioned with an overlapping restricted additive Schwarz method. We also discuss the parallel performance of the implicit domain decomposition method for solving the fully coupled nonlinear system on a supercomputer with a large number of processors. This is a joint work with A. Barker and Y. Wu. (Received August 23, 2011)