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Schwarz Preconditioning for Incompressible Navier-Stokes Equations with Resistive Boundary Conditions

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We study a parallel algorithm for the simulation of blood flows in arteries using a fully coupled system of PDEs consisting of incompressible Navier-Stokes equations and a linear elastic equation. The system is discretized implicitly with a finite element method on unstructured moving meshes. Because of the branching geometry in the artery tree, the outflow boundary condition plays an interesting role in the accuracy of the blood flow model. In this talk, we discuss a Schwarz type preconditioner for solving the linearized Navier-Stokes equations with resistive outflow condition and we compare its accuracy and performance with the standard pressure type boundary condition.