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Computational Modeling for Fluid-Porous Structure Interaction with Large Structural Deformation RANA ZAKERZADEH, University of Texas at Austin, PAOLO ZUNINO, University of Pittsburgh — In this work, we utilize numerical models to investigate the importance of poroelasticity in the interaction of blood flow with a porohyperelastic vessel wall, and to establish a connection between the apparent viscoelastic behavior of the structure part and the intramural filtration flow. The main novelty is in the design of a Nitsche's splitting strategy, which separates the fluid from the structure sub-problems for the Fluid-Porous Structure Interaction system undergoing large deformations. The general idea is to use this model to study the influence of different parameters on energy dissipation in a poroelastic medium. We also study a new benchmark test specifically designed to investigate the effect of poroelasticity on large deformations.

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