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Guoyi Ke* (gke@lsua.edu), 8100 Hwy 71 S, Alexandria, LA 71302, and **Sara Calandrini** and **Eugenio Aulisa**. *A novel preconditioning technique for fluid-structure interaction with applications in biomechanics.*

We present a novel preconditioning technique for Krylov subspace algorithms to solve fluid-structure interaction (FSI) linearized systems arising from finite element discretizations. An outer Krylov subspace solver preconditioned with a geometric multigrid (GMG) algorithm is used, where for the multigrid level sub-solvers, a field-split (FS) preconditioner is proposed. The block structure of the FS preconditioner is derived using the physical variables as splitting strategy. To solve the subsystems originated by the FS preconditioning, an additive Schwarz (AS) block strategy is employed. The proposed field-split preconditioner is tested on biomedical FSI applications. Both 2D and 3D simulations are carried out considering aneurysm and venous valve geometries. The performances of the FS preconditioner are compared with those of a second preconditioner of pure domain decomposition type. (Received September 15, 2019)