Iterative splitting schemes for a fully dynamic poroelasticity model

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ABSTRACT

Sequential block-partitioned solvers have in the recent past been quite popular for multi-physics and in particular poroelasticity models. Such enable tailored solver technology for the respective single-physics problems via iterative coupling, as well as suggest suitable block-preconditioners for monolithic solvers.

In this talk, we focus on a thermodynamically consistent poroelasticity model recently proposed in [1]. It extends the classical quasi-static Biot equations by incoporating inertia contributions in both solid and fluid equations, aiming at biomedical applications; for instance, the perfusion of the heart.

Following ideas and techniques from previous works [2, 3], we present block-partitioned solvers for the fully dynamic poroelasticity model supported by theoretical convergence analysis [4].

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