

ROBUST DISCRETIZATION AND SOLUTION OF COUPLED PROBLEMS IN POROUS MEDIA

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ABSTRACT

Porous media applications often face the challenge of the presence of multiple scales in space and time as well complex geometries. These have a direct impact on discretization and solution strategies, for coupled problems introducing a range of different and potentially dynamically changing problem characteristics (see [1] for a review of current challenges). With applications in mind ranging from geological carbon storage to perfusion of biological tissue, both accurate, robust, and efficient numerical methods are highly desirable. A particular focus of this session lies reliable and efficient a posteriori error estimates (e.g. [1]) and parameter robust approximation and preconditioning (e.g. [2]) and robust and efficient iterative decoupling (e.g. [3]).

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