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ROBUST AND RELIABLE NUMERICAL METHODS IN POROMECHANICS

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ABSTRACT

The multiphysics coupling of fluids and the deformation of porous materials, referred to as poromechanics, is an indispensable component of various applications within, e.g., geotechnical, and biomedical engineering.

Poromechanics models usually have a strongly coupled, potentially highly nonlinear character, often with different scales required to be considered. The robustness and reliability of the corresponding numerical approximations as well as efficient solver technologies are therefore essential and recently received increased attention (see [1]).

The purpose of this mini-symposium is to gather recent contributions to topics including, but not limited to, advanced discretizations on possibly complex meshes (e.g. [2]); reliable and efficient a posteriori error estimates (e.g. [3]); parameter robust approximation and preconditioning (e.g. [4]); robust and efficient iterative decoupling (e.g. [5]).

We welcome developments targeting quasi-static, dynamic, multiple-network, finite strain or multiphase poromechanics, porothermoelasticity, poroplasticity etc.

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