

Coupling Flow and Geomechanics with Fractures in Porous Media

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ABSTRACT

The modeling of coupled flow simulation and mechanical deformations is important in addressing the response of reservoirs located in structurally weak geologic formations and, more recently, in modeling hydraulic fracturing. In this presentation, we describe a multipoint flux algorithm for modeling multiphase flow and a Galerkin finite element method for geomechanics. We discuss treatment of fixed fractures for production and a phase field model for treating fracture propagation. Theoretical convergence results, an efficient iterative coupling solution technique, and computational examples are presented.