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A PDE constrained optimization approach to the simulation of discrete fracture network flows

Efficient numerical simulations of subsurface fluid flows in fractured rocks are of interest for many applications ranging from water resources management, contaminant transport and dissemination, oil prospecting and enhanced oil/gas recovery.

A new method is proposed, which relies on the reformulation of the problem as a PDE-constrained optimization problem. Following this approach, fracture meshes are not required to match along traces and any kind of mesh conformity along traces is skipped, thus making the mesh generation process an easy task, attainable with a standard mesh generator. Furthermore, the problem on the overall DFN can be decoupled in several local problems on the fractures, thus allowing a great potential for a possible parallel implementation.

Ort: Raum 30.02.003 (2. Stock) (Mathegeb. 30 West) Zeit: Dienstag, 09.04.2013, um 14.00 Uhr

Zu diesem Vortrag laden wir Sie herzlich ein.

gez. Prof. Dr. Alfio Borzi