

## FRACTURE GROWTH IN A POROELASTIC MEDIUM

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We consider the subcritical growth of a macroscopic fracture in a poroelastic medium. The medium is modelled as a linear Biot material, while the fracture appears as a discontinuity in the displacement field. The fracture is filled with a fluid, which interacts both with the fluid and the matrix of the poroelastic medium. Under external loads, the fracture grows in a subcritical way.

We simulate this coupled system using finite elements on two grids of different dimensions. For the Biot solid we use a fixed grid and the extended finite element method (XFEM) for the time-dependent displacement discontinuity. The fluid flow in the fracture is modelled on a lower-dimensional grid nonconformingly embedded into the matrix grid. Both are coupled using the generic grid coupling mechanism available in the DUNE grid-glu library.