MATHEMATICAL MODELLING OF THE THERMO-POROELASTICITY PROBLEMS IN FRACTURED AND HETEROGENEOUS MEDIA

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Mathematical modelling of the thermo–poroelasticity problems in fractured and heterogeneous media plays an important role in geothermal energy production and nuclear waste disposal. The mathematical model is described by a system of equations for heat transfer, flow in a porous medium, and the stress-strain state of the reservoir. For numerical solution, we use a finite element method with discrete fracture model for flow and heat transfer equations. We construct unstructured grids for approximation of the fracture geometry and perform numerical simulations for several test problems.