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Elastic normal fracture deformation in thermoporomechanical media

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Many subsurface processes feature mechanically closed fractures elastically deforming in response to stress changes. In cases involving temperature contrasts, such as geothermal reservoirs, these changes are typically due to thermal stresses as well as pore pressure. In turn, changes in hydraulic fracture apertures impact the flow field and thereby also heat transport, resulting in a strongly coupled system of governing equations. We study this interplay drawing on a series of numerical simulations using the fracture simulation toolbox PorePy. The thermoporomechanical system is solved fully coupled in both fractures and matrix, ensuring a rigorous numerical representation of the modelled processes.

Participation

In-Person

References

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