



Structural impact of fractures on dynamic processes in geothermal reservoirs

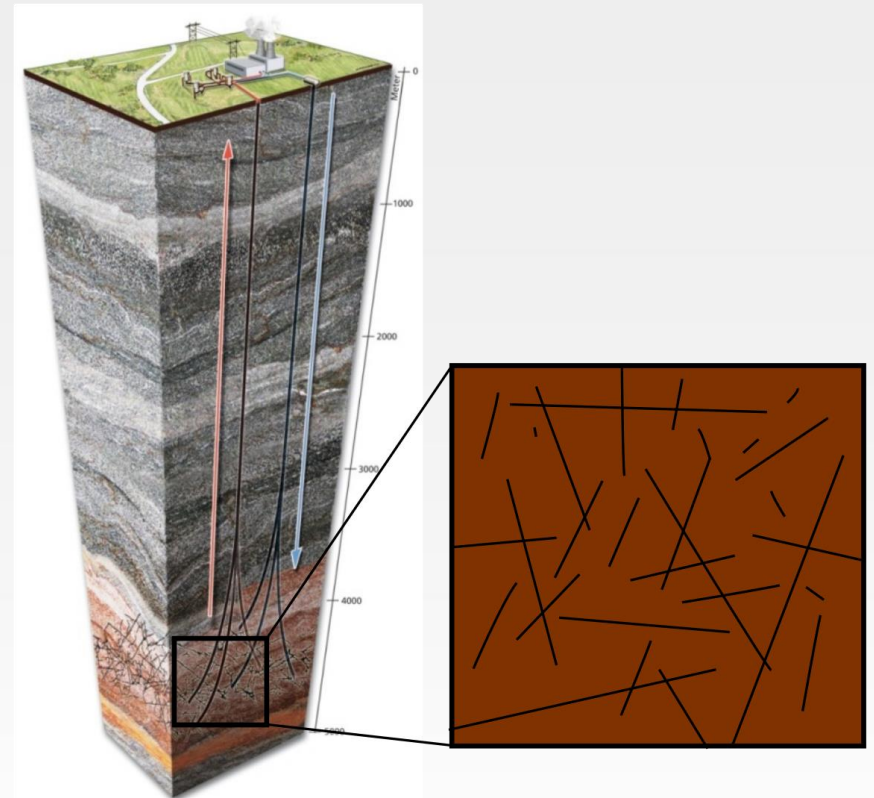
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Fractures in geothermal reservoirs



- Fractures important for geothermal models
 - Flow
 - Rock mechanics
- Physics may be inherently different from rock matrix



Fractures makes modeling challenging



- Complex geometry
- Fractures on all scales
- High aspect ratios



Fractures makes modeling challenging



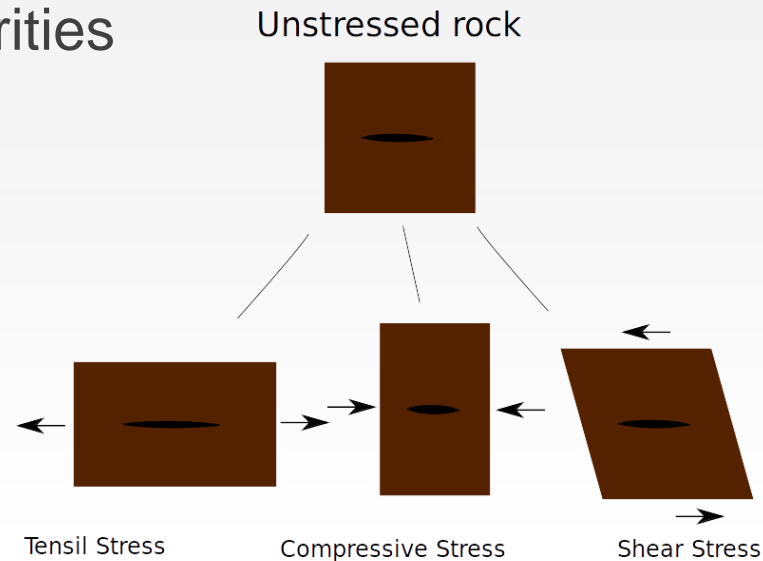
- Does not fit many standard assumptions
- Coupling between fracture and matrix



Rock Mechanics



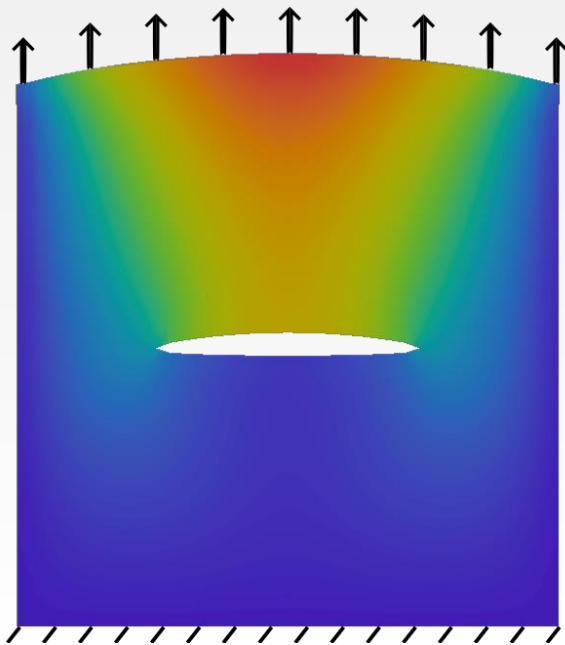
- Rock is an elastic medium
- Inhomogeneities creates difficulties
- Fractures may create discontinuities
- Stress is transferred across fractures
 - Introduce non-linearities



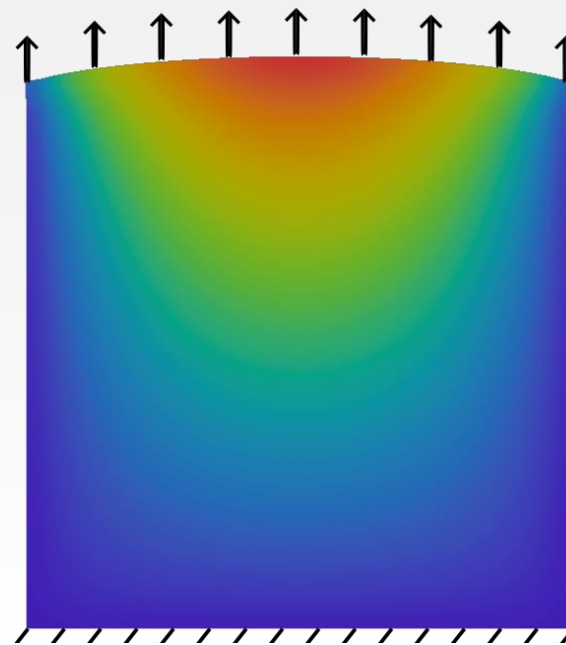
Discontinuity in displacement



- Displacement jump across fracture
- Shear displacement and normal displacement



Fracture



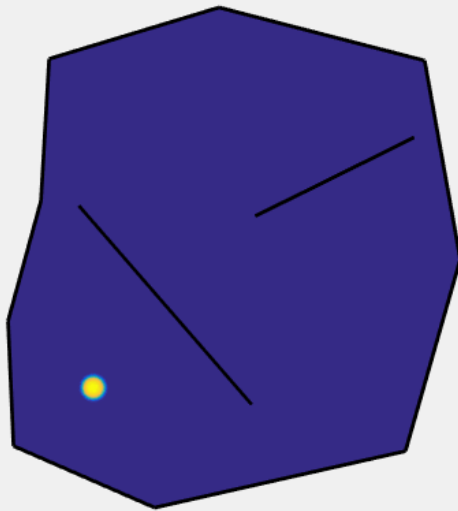
No fracture



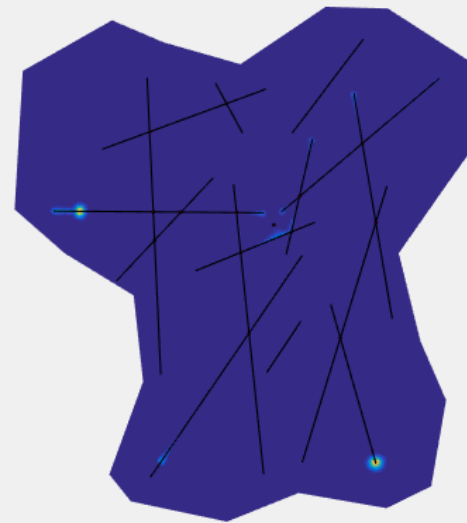
Fractures affect flow



- Different fractures may have very different effect on flow
 - Permeable vs. blocking fractures
- Define flow patterns



Blocking fractures



Permeable fractures





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