

Preventing Wellbore Damage during CO₂ Injection

Scientific Achievement

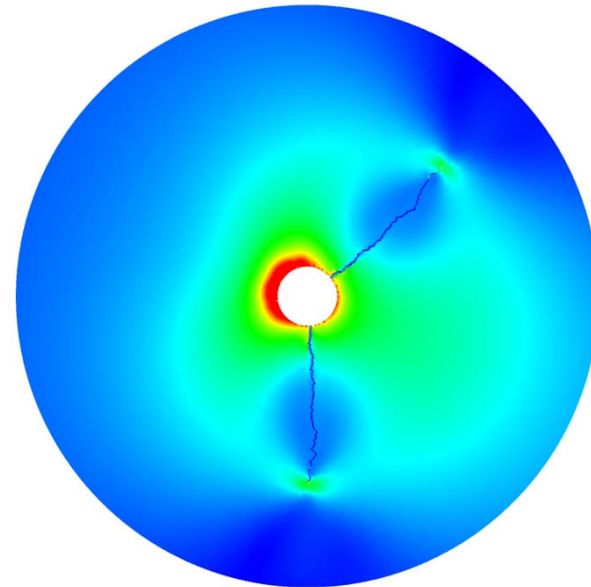
Developed novel computational method for modeling fluid-induced discrete fracture propagation using random finite-element meshes and cohesive-zone crack-tip models.

Significance and Impact

Approach allows identification of appropriate CO₂ sequestration field sites, and design of appropriate secure injection schedules.

Publications

- Bishop, J. E. (2014), A Displacement-Based Finite-Element Formulation for General Polyhedra using Harmonic Shape Functions, *International Journal for Numerical Methods in Engineering*, 97, 1-31.
- Bishop, J. E., and O. E. Strack (2011), A statistical method for verifying mesh convergence in Monte Carlo simulations with application to fragmentation, *International Journal for Numerical Methods in Engineering*, 88(3), 279-306.



Modeling stress induced fracture growth due to fluid injection in a borehole.

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