PHASE-FIELD FRACTURE PROPAGATION
- MATRIX-FREE IMPLEMENTATION -

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ABSTRACT

The non-linear and non-convex nature of the energy functional combined with the variational inequality associated to phase-field fracture models puts a great challenge to most optimization algorithms. Dealing with possibly many iterations of the non-linear solver (e.g. active set), a fast method for solving the linearized problems is essential for an efficient performance. In this talk, we take a look at a matrix-free linear solver, which gains additional speed by eliminating the need to update the Jacobian every time when either the grid, linearization point (within Newton's method) or active set changes.

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