

## Fracture patterns in brittle materials with peridynamics.

A coupling algorithm of the peridynamic formulation and the finite element method is contrived to increase efficiency of the nonlocal elastic theory and to overcome the limitation of undefined discontinuities in classical continuum model, ending up with taking mutual advantages. However, research about the coupling scheme is scant, except few recent studies. With the coupling scheme, evolving patterns of multiple cracks in a brittle material are predicted. During the dynamic fracture process, the branching instabilities of crack propagation and fragmentation patterns in a brittle material with an initial crack are, through the algorithm, presented. The prediction of the coupling scheme for the crack profiles and the fracture envelope has been found to be in a good agreement with experimental observations.