

A VISCOUS APPROXIMATION OF CRACK PROPAGATION IN ELASTIC BODIES

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We discuss a rate-independent model for crack propagation in 2D elastic bodies without prescribing a priori the crack path. Due to the dependence on the crack path the energy is nonconvex; therefore, solutions may have jumps as a function of time. We employ a viscous approximation of the model and consider it as a limit of systems driven by viscous, rate-dependent dissipation in order to prove the existence of solutions that satisfy the Griffith fracture criterion and to describe accurately the behavior of the solutions at jumps.

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