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Interaction of Propagting Cracks and Shear Waves

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Shear waves generated from an ultrasonic transducer are used to twist dynamically growing crack fronts; the response of crack front to such external perturbations is examined in order to investigate the primary cause of surface roughening in brittle materials. The response of the crack front is found to be linear in amplitude and frequency of the perturbing wave and without persistence. The response to random perturbations, introduced by localized material inhomogeneities at the free surface, is also discussed. The implications of these results to the existence of the theoretically predicted crack front waves are also discussed.

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