

## **Existence for dynamic Griffith fracture with a weak maximal dissipation condition**

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The study of dynamic fracture is based on the dynamic energy-dissipation balance. This condition is always satisfied by a stationary crack together with a displacement satisfying the system of elastodynamics. Therefore to predict crack growth a further principle is needed. We introduce a weak maximal dissipation condition that, together with elastodynamics and energy balance, provides a model for dynamic fracture, at least within a certain class of possible crack evolutions. In particular, we prove the existence of dynamic fracture evolutions satisfying this condition, subject to smoothness constraints, and exhibit an explicit example to show that maximal dissipation can indeed rule out stationary cracks. These results are obtained in collaboration with G. Dal Maso (SISSA) and C. Larsen (WPI).