From adhesive contact to brittle delamination in visco-elastodynamics

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This contribution addresses two models describing the rate-independent fracture of a material compound along a prescribed interface in a visco-elastic material. This unidirectional process is modeled in the framework of Generalized Standard Materials with the aid of an internal delamination parameter. In the context of (fully) rate-independent systems within the energetic formulation it has become a well-established procedure to obtain solutions of the brittle model via an adhesive-contact approximation based on tools of evolutionary Gamma-convergence. This means that the non-smooth, local brittle constraint, confining displacement jumps to the null set of the delamination parameter, is approximated by a smooth, non-local surface energy term. Here, we discuss the extention of this approach for systems that couple the rate-independent evolution of the delamination parameter with a viscous and dynamic evolution of the displacements in the bulk. This is joint work with Riccarda Rossi (Brescia) .