

Focardi - Phase-field approximation of a vectorial, geometrically nonlinear cohesive fracture energy

Sunday, 27 November 2022 11:45 (45 minutes)

Abstract. We consider a family of vectorial models for cohesive fracture, which may incorporate $SO(n)$ -invariance.

The deformation belongs to the space of generalized functions of bounded variation and the energy contains an (elastic) volume energy, an opening-dependent jump energy concentrated on the fractured surface, and a Cantor part representing diffuse damage.

In recent a work, joint with S. Conti and F. Iurlano, we have shown that this type of functional can be naturally obtained as Gamma-limit of an appropriate phase-field model. The energy densities entering the limiting functional can be expressed, in a partially implicit way, in terms of those appearing in the phase-field approximation.

Along the talk, we will comment on several phase-field models that have been introduced and analyzed since the seminal works of Ambrosio and Tortorelli, and that finally have led to those we have proposed.

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