Phase-field approximation for a class of cohesive energies with an activation threshold

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I will present a work with A. Chambolle, in which we study the Gamma-limit of Ambrosio-Tortorelli-type functionals $D_{\epsilon}(u,v)$, whose dependence on the symmetrised gradient $e(u)$ is different in $Au$ and in $e(u) - Au$, for a $C$-elliptic symmetric operator $A$, in terms of the prefactor depending on the phase-field variable $v$. The limit energy depends both on the opening and on the surface of the crack, and is intermediate between the Griffith brittle fracture energy and the one considered by [Focardi-Iurlano, SIMA 2014]. In particular we prove that G(S)BD functions with bounded $A$-variation are (S)BD.