

## **Homogenisation of Ambrosio-Tortorelli type functionals**

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In this talk we analyze the limit behaviour of general, singularly perturbed, elliptic functionals of Ambrosio-Tortorelli type.

Under mild hypotheses on the integrands, and requiring in particular that the volume integrand grows superlinearly in the gradient-variable, we show that the functionals converge to a Mumford-Shah type functional. Namely, the limit is a free-discontinuity functional whose surface integrand does not depend on the crack opening. This is a byproduct of a volume-surface decoupling effect.

Finally we see an application to the case of homogenisation of gradient damage models.

This is based on joint works with Annika Bach, Teresa Esposito and Caterina Ida Zeppieri.