

Nonlocal Character of the Reduced Theory of Thin Films with Higher Order Perturbations

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Abstract: In this paper it is shown that, when there is lack of coercivity with respect to some partial derivatives on the underlying field u , then the relaxation of the functional

$$u \mapsto \int_{\Omega} f(u, Du) \, dx$$

may fail to be local. This result is applied to a singular perturbation model for a membrane energy depending on deformations and out-of-plane bending.