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Linear elasticity obtained from finite elasticity by Γ-convergence under weak coerciveness conditions. (English) Zbl 1250.74008

Ann. Inst. Henri Poincaré, Anal. Non Linéaire 29, No. 5, 715-735 (2012).

Summary: The energy functional of linear elasticity is obtained as Γ-limit of suitable rescalings of the energies of finite elasticity. The quadratic control from below of the energy density $W(\nabla v)$ for large values of the deformation gradient ∇v is replaced here by the weaker condition $W(\nabla v) \geqslant |\nabla v|^p$, for some $p > 1$. Energies of this type are commonly used in the study of a large class of compressible rubber-like materials.

MSC:

74B05 Classical linear elasticity

Full Text: DOI

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