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Abstracts

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Young Measures, Microstructure and Quasiregular Maps

Materials that undergo solid phase transformations involving a change of shape at a critical temperature typically develop patterns of fine microstructure. This can be described by a model based on nonlinear elasticity in which the free-energy function is not quasiconvex, leading to variational problems in which the minimum energy is not attained. Minimizing sequences generate gradient Young measures that describe aspects of the microstructure. The lecture will survey some recent results in this area, in particular concerning predictions of non-classical austenite-martensite interfaces. Techniques developed by Reshetnyak concerning Jacobians and quasiregular maps play a significant role.