

Stress-Induced Martensitic Phase Transition Front Propagation

Arkadi Berezovski⁽¹⁾, Gerard A. Maugin⁽²⁾

(1) *Institute of Cybernetics at Tallinn Technical University, Tallinn, Estonia*

(2) *Université Pierre et Marie Curie, Laboratoire de Modélisation en Mécanique, Paris, France*

A non-equilibrium description of states of computational elements and their interaction is proposed for the numerical simulation of stress-induced martensitic phase transition front propagation in thermoelastic solids. This description is based on the generalization of the thermodynamics of discrete systems to the thermoelastic case. A finite-volume numerical scheme is then constructed by means of corresponding contact quantities. Additional constitutive information is introduced by means of certain assumptions about the entropy production at the phase boundary. Results of numerical simulations capture experimental observations.

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