Craciun, Bogdan; **Bhattacharya, Kaushik**

Effective motion of a curvature-sensitive interface through a heterogeneous medium. (English) Zbl 1061.35148

Interfaces Free Bound. 6, No. 2, 151-173 (2004).

The authors study propagating fronts or interfaces with normal velocity $v_n = f(x) - c\kappa$, i.e. the normal velocity depends on a (periodic) function f and the mean curvature κ. The problem is motivated, for instance, by the motion of a phase boundary through a heterogeneous material. For the homogenization of the problem they show that the interface propagates with normal velocity $v_n = \bar{f}(n)$, in particular the normal velocity just depends on the normal n to the interface. Moreover, other features and examples like trapped interfaces are discussed, the limit of large curvature coefficients c is characterized in the last section.

Reviewer: Michael Bildhauer (Saarbrücken)

MSC:

35Q72 Other PDE from mechanics (MSC2000)
74N20 Dynamics of phase boundaries in solids
35R35 Free boundary problems for PDEs

Keywords:

level-set formulation; effective motion; homogenization; curvature; trapped interfaces

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