

Energy Barriers for Boundary Nucleation in a Two-well Model

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Abstract

Shape-memory alloys are specific materials that, e.g. during a cooling process, change their crystalline structure. For this, their internal elastic energy is a multi-well functional acting on the deformation gradient. This transformation is often initiated by the formation of a small inclusion of deformed material (nucleation).

In this talk, we study scaling laws for a double-well singularly-perturbed elastic energy in which the inclusion of deformed material is constraint in the halfspace and has prescribed volume.

This problem is a variant of the isoperimetric problem with an additional (nonlocal and anisotropic) bulk term given by the elastic energy. We will see how the relation between the anisotropy of the material and the constraint affects the scaling.

This is a joint work with Konstantinos Zemas.