1011-49-38   **Maria G. Reznikoff*** (`mrezniko@math.princeton.edu`), Mathematics Department, Princeton University, 403 Fine Hall – Washington Road, Princeton, NJ 08544-1000. *Action Minimization and Sharp Interface Limits.*

The Allen Cahn action minimization problem,

$$\inf_{\substack{u(\cdot,0) \equiv -1 \\ u(\cdot,T) \equiv +1}} \int_0^T \int_\Omega |\varepsilon^{1/2}\dot{u} + \varepsilon^{-1/2}(-\varepsilon\Delta u + \varepsilon^{-1}V'(u))|^2 \, dx \, dt,$$

stems from the study of stochastically-driven phase transformation. Its sharp interface limit is connected to, but different from, the sharp interface limit of the related energy minimization problem. A competition between nucleation costs and propagation costs in the action problem results in families of different action minimizing pathways. We explain the heuristics and introduce the candidate for the Γ-limit of the action functional. The lower bound for this Γ-convergence is linked to the behavior of the limiting energy measures. We present rigorous results for the case of one space dimension.

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