

ANALYSIS SEMINAR
Thursday April 21 at 11:00am in WWH 1302

Speaker: Nicholas Alikakos, University of Athens

Title: Sharp Lower Bounds for the Vector Allen-Cahn Energy, and Qualitative Properties of Minimizers

Abstract: We study minimizers u_ϵ of $J(U) = \int_\Omega \epsilon^{-1}W(U) + \epsilon|\nabla U| dx$, where U takes values in R^m and W is nonnegative with $W = 0$ only at finitely many points a_1, \dots, a_N in R^m . The domain Ω is a bounded subset of R^2 with certain geometrical features, and we consider well-prepared Dirichlet data.

We derive a sharp lower bound (as ϵ tends to 0) with the additional feature that it involves half of the gradient and part of the domain. Based on this we derive very precise (in ϵ) pointwise estimates up to the boundary of the domain and also up to the boundary of the limiting partition.

We do not impose symmetry hypotheses and we do not employ Gamma-convergence techniques. Our results, via rescaling, have implications on the existence of entire solutions connecting global minima of W .