

abstract

MATHEMATICAL PHYSICS SEMINAR

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

We examine several non convex free energy functionals involving a double well potential, and an energy term that penalizes variation in the mass density field. The simplest example is the so-called Cahn-Hilliard functional, which is purely phenomenological, but others with a non-local energy term that actually arise in scaling limits of microscopic systems are more interesting.

We minimize the free energy under a constraint on the total mass. Whether minimizers are uniform, or whether they concentrate a fraction of the mass in a droplet depends critically on the relation between the mass and the volume (and properties of the functional). We determine the transition, and the nature of the minimizers at the transition. This is joint work with M. Carvalho, R. Esposito, J. Lebowitz and R. Marra.