Irene Fonseca

Phase Separation in Heterogeneous Media

A variational model in the context of the gradient theory for fluid-fluid phase transitions with small scale heterogeneities is studied. In the case where the scale of the small heterogeneities is of the same order of the scale governing the phase transition, the interaction between homogenization and the phase transitions process leads to an anisotropic interfacial energy. Bounds on the homogenized surface tension are established. In addition, a characterization of the large-scale limiting behavior of viscosity solutions to non-degenerate and periodic Eikonal equations in half-spaces is given.
This is joint work with Riccardo Cristoferi (Radboud University, The Netherlands), Adrian Hagerty (USA), Cristina Popovici (USA), Rustum Choksi (McGill, Canada), Jessica Lin (McGill, Canada), and Raghavendra Venkatraman (NYU, USA).