Spinodal Decomposition in the Presence of Dislocations

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Elastic fieds in materials originate from different sources, most notably from dislocations. In alloys, elastic deformations also occur due to composition-dependent lattice constants and elastic moduli. Hence, an interesting coupling arises between the elastic fields of the dislocations and those due to compositional inhomogeneities. In this talk, I will present a continuum approach to study the interaction between composition and dislocations. I will show how this leads to an effective free-energy formalism that can be used to simulate spinodal decomposition in the presence of dislocations.