
Oscillatory driving of spinodal decomposition

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Résumé

Spinodal decomposition is a widespread phenomenon, observed in many different systems such as magnets or binary liquids. When the temperature drops below the critical value, the system undergoes phase separation and forms a domain structure. This is described by the Time dependent Ginzburg Landau equation (Model A or Allen-Cahn) where we explore how the coarsening domain structure can be influenced by oscillations of the temperature near the critical point. I will show that, if the temperature is above the critical value for long enough, an intermediate coarsening law is observed in 1D. In higher dimensions, mean curvature flow holds at leading order, but pinching of narrow domain protrusions, absent in pure mean curvature flow, leads to a different coarsening structure in real space.

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