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Physical criteria for comparing length and time scales of coarsening models BENJAMIN VOLLMAYR-LEE, Bucknell University — A variety of models have been introduced to study the dynamics of phase separation, ranging from sub-critical kinetic Ising models to phase-field models to Oono and Puri's cell dynamical systems (CDS). These models have in common that at asymptotic late times the dynamics reduces to that of sharp interfaces driven by a surface tension. In practical terms, one is typically interested in simulating these models into the asymptotic late-time regime, but it is not clear how to compare the rates of approach to asymptotia. Additionally, while the sharp interface dynamics have a high degree of universality, it is not clear to what degree this applies to the sub-asymptotic dynamics. A scheme is presented to address these questions. Essentially, one first identifies the relevant parameters that determine the asymptotic dynamics and leading sub-asymptotic dynamics. From these, the appropriate dimensionless measures of effective convergence can be obtained. The technique will be illustrated by a comparison of CDH to the Cahn-Hilliard phase field model.

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