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The effects of pattern morphology on late time scaling in the Cahn-Hilliard model[1] TIMOTHY SULLIVAN, Kenyon College, Gambier, OH, PETER PALFFY-MUHORAY, Liquid Crystal Institute, Kent State University, Kent, OH — As previously reported, numerical simulations of the dimensionless Cahn-Hilliard equation, have been performed in 2D. The initial state consisted of Gaussian distributed random values on a 540 by 540 grid. The Cahn-Hilliard equation conserves the spatial average of the dimensionless concentration difference, $\langle\psi\rangle$, and initial conditions were chosen with $\langle\psi\rangle$ ranging from 0 to 0.9. As time progresses the system quickly separates into distinct regions where $\langle\psi\rangle \approx +1$ or $\langle\psi\rangle \approx -1$ and then slowly coarsens. Analysis of the late time scaling of a characteristic pattern size scale,$R_G(t)$, the first zero of the pair correlation function, showed that near $\langle\psi\rangle = 0.2$ the time to reach the expected dynamical scaling regime grew very long. This, coupled with the change in the pattern from sinuous structures near $\langle\psi\rangle = 0$ to a pattern of circular regions for larger values of $\langle\psi\rangle$, suggest a morphological phase transition. We explore this idea and will report on our attempts to create order parameters describing the pattern and will present results on the behavior of the candidate order parameters near $\langle\psi\rangle = 0.2$.

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Timothy Sullivan
Kenyon College

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