1056-35-321 **Colleen T Ackermann*** (cackerm@vt.edu), 4900 Chipper Lane, Fairfax, VA 22032, and
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Nucleation and Spinodal Decomposition in Ternary-component Alloys. Preliminary report.

The Cahn-Morral System has often been used to model the dynamics of phase separation in multi-component alloys on large domains. In this paper we time independently examine phase separation on small one-dimensional domains. In particular we use AUTO to create bifurcation diagrams of equilibrium solutions for two different nonlinearities and use Matlab to observe the structure of the material at various points on the diagrams. We compare the results to determine if using different nonlinearities significantly affects the behavior of the Cahn-Morral System. This research work was completed as a part of the George Mason University Research Experiences for Undergraduates program that was supported in part by the National Science Foundation REU (DMS 0851612) and the Department of Defense ASSURE program. (Received August 28, 2009)