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M R Atkins* (matkins@gmu.edu). *A numerical and analytical study of modeling techniques for microstructure evolution.*

Microstructural evolution is a phenomenon of paramount importance in various areas of industry; its understanding is critical for designing materials with superior properties. The nonlinear and metastable nature of this mesoscale phenomenon has given rise to various numerical models that attempt to describe it. In this talk we provide a comparison of several computational models that describe microstructure evolution based on their ability to predict statistical properties of different materials. The results of numerical experiments and several extensions of the known modeling techniques are discussed. (Received July 23, 2008)