Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Dynamic phase transition in the classical anisotropic XY model on a square lattice[1] WILLIAM BAEZ, The Ohio State University, TRINANJAN DATTA, Augusta State University — Ginzburg-Landau analysis of the anisotropic XY model in a spatially homogeneous oscillating magnetic field on a square lattice suggests the existence of several dynamical phases - Ising symmetry restoring order (Ising SRO), Ising symmetry breaking order (SBO), XY symmetry restoring order (XY SRO), and XY symmetry breaking order (XY SBO). We investigate the presence of these phases and the dynamic phase transition (DPT) between these phases using classical Monte Carlo simulation techniques. We explore the system for a range of values for the external field amplitude, field frequency, and anisotropy parameter. Utilizing the period-averaged magnetization (in both the x- and y- component) as the dynamic order parameter we confirm the presence of multiple DPT transitions in the model. We also construct the probability density histograms of the dynamic order parameter to validate the existence of the four DPT phases.

[1]Cottrell College Science Awards (RCSA Award #20073)

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Date submitted: 10 Nov 2011 Electronic form version 1.4