

Abstract Submitted
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Monte Carlo Simulation of a Novel Classical Spin Model with a Tricritical Point TYLER CARY, RICHARD SCALETTAR, RAJIV SINGH, University of California, Davis — Recent experimental findings along with motivation from the well known Blume-Capel model has led to the development of a novel two-dimensional classical spin model defined on a square lattice. This model consists of two Ising spin species per site with each species interacting with its own kind as perpendicular one dimensional Ising chains along with complex and frustrating interactions between species. Probing this model with Mean Field Theory, Metropolis Monte Carlo, and Wang Landau sampling has revealed a rich phase diagram which includes a tricritical point separating a first order magnetic phase transition from a continuous one, along with three ordered phases. Away from the tricritical point, the expected 2D Ising critical exponents have been recovered. Ongoing work focuses on finding the tricritical exponents and their connection to a supersymmetric critical point.

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