Abstract Submitted
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Monte Carlo simulations of kagome lattices with magnetic dipolar interactions MARTIN PLUMER, Memorial University Newfoundland, MARK HOLDEN, University of Waterloo, ANDREW WAY, Memorial University of Newfoundland, IVAN SAIKA-VOIVOD, Memorial University Newfoundland, BYRON SOUTHERN, University of Manitoba — Monte Carlo simulations of classical spins on the two-dimensional kagome lattice with only dipolar interactions are presented [1]. In addition to revealing the sixfold-degenerate ground state, the nature of the finite-temperature phase transition to long-range magnetic order is discussed. Low-temperature states consisting of mixtures of degenerate ground-state configurations separated by domain walls can be explained as a result of competing exchange-like and shape-anisotropy-like terms in the dipolar coupling. Fluctuations between pairs of degenerate spin configurations are found to persist well into the ordered state as the temperature is lowered until locking in to a low-energy state. Results suggest that the system undergoes a continuous phase transition at $T \approx 0.43$ in agreement with previous MC simulations [2] but the nature of the ordering process differs [3]. Preliminary results which extend this analysis to the 3D fcc ABC-stacked kagome systems will be presented [4].

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