

Abstract Submitted
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The Heat Bath Monte Carlo Algorithm for the Ising Model of Ferromagnetism CHRISTOPHER LEMON, RONALD JOHNS, Ohio Northern University — The mathematical theory of Markov chains is placed in the context of the Ising model of ferromagnetism, an important problem in statistical physics. Although not a Markov chain itself, the two-dimensional Ising model can be simulated with the heat bath algorithm, which treats the Ising model as a Markov Chain. A Matlab program and variations were written that use Monte Carlo simulation and the heat bath algorithm to compute quantities arising in the Ising model. Results from this method were then compared to those derived from the mathematical definition of the Ising Model. Based on the agreement of results, it can be concluded that the heat bath Markov Chain method is a convenient and valid method to simulate the two-dimensional Ising model.

Christopher Lemon
Ohio Northern University

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