

Abstract Submitted
for the 4CF10 Meeting of
The American Physical Society

The Ising model as a pedagogical tool RYAN SMITH, GUS L.W. HART, Brigham Young University — Though originally developed to analyze ferromagnetic systems, the Ising model also provides an excellent framework for modeling alloys. The original Ising model represented magnetic moments (up or down) by a $+1$ or -1 at each point on a lattice and allowed only nearest neighbors interactions to be non-zero. In alloy modeling, the values ± 1 represent A and B atoms. The Ising Hamiltonian can be used in a Monte Carlo approach to simulate the thermodynamics of the system (e.g., an order-disorder transition occurring as the temperature is lowered). The simplicity of the model makes it an ideal starting point for a qualitative understanding of magnetism or configuration ordering in a metal. I will demonstrate the application of the Ising model in simple, two-dimensional ferromagnetic systems and alloys.

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Date submitted: 13 Sep 2010

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