

Abstract Submitted  
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**Potts Model: A Simple Way to Discover New Alloys** WILLIAM KEELE, Brigham Young Univ - Provo — Metal alloys are used for many different things in our world, such as jets, engines, and other machinery. We aim to simulate alloys by computer modeling, rather than physical experimentation. The Potts Model and Ising Model are different methods to simulate an alloy in a simple way. For the Ising Model, one takes a lattice of points with each point having a spin value pointing up or down, or  $q=2$ , with each spin representing a different type of atom. The Potts Model is a generalized form of the Ising, so we explore other spin values in the same lattice as  $q$  goes from 3 to infinity. One key aspect to studying the Potts and Ising Models is to see how the spins of a certain lattice may affect those spins around it. In my own experiments with the Potts Model, I modeled systems ranging from  $q=3$  to  $q=10$  and reported Magnetization, Energy, and Specific Heat as a function of temperature.

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