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Aneesur Rahman Prize: The Inverse Ising Problem

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Many methods are available for carrying out computer simulations of a model Hamiltonian to obtain thermodynamic information by generating a set of configurations. The inverse problem consists of recreating the parameters of the Hamiltonian, given a set of configurations. The problem arises in a variety of contexts, and there has been much interest recently in the inverse Ising problem, in which the configurations consist of Ising spins. I will discuss an efficient method for solving the problem and what it can tell us about the Sherrington-Kirkpatrick model.