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Title:	Models and methods for classical spin systems
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Abstract:	We model certain real systems using classical spins with some suitable spin inter- action Hamiltonian. In all the simulations, Classical Monte Carlo method is used to extract expectation value of observables like Energy, Magnetisation, Specific Heat and Susceptibility from a large periodic spin lattice at a particular temper- ature. The spins interact via a particular model as if they are mimicing a corre- sponding real system (some Magnetic material). In the initial chapters we discuss how the Classical Monte Carlo method is the preferable one. Then in the later chapters we mainly deal with two types of models on large periodic spin lattices: 1. Triangular lattice model with site distortions: Here, we apply the Heisen- berg model on triangular lattice. This model also demonstrates geometrical frustration. We divide this discussion into two parts, one with lattice distor- tion and the other without lattice distortion. 2. Heisenberg Kitaev model (Honey Comb lattice): Here, we deal with spin interactions on Honeycomb lattice. We see variation in the magnetic or- der of the ground state spin configuration with the relative variation of the parameters values of the model. Under a particular model of spin interations, we see how the magnetic phase of our lattice makes transitions with changes in temperature. The task is to find the values of the parameters of a given model and temperatures for which the system attains magnetic ordering i.e. it settles to a phase.
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