Assignment 6
Due on 2019-10-20, 25:48 IST.

Consider the Ising model in a 3D lattice with nearest neighbor interaction. Assume the system is not in thermal equilibrium.

1. The eigenvalues of the transfer matrix are \( \lambda = e^{\pm \phi} \).

2. The long-range order factor for the above model is \( N = 1 \).

3. The effective mean-field Hamiltonian is:

   \[ H = -\sum_{i} \left( S_i^x S_{i+1}^x + S_i^y S_{i+1}^y + S_i^z S_{i+1}^z \right) + H_0 \]

   Where \( H_0 \) is the magnetic field.

   The transversal equation for the mean field solution is \( \frac{dS}{dt} = \frac{1}{1 + e^{\beta H}} \).