Dynamically order-disorder transition in a triangular lattice driven by a time dependent magnetic field

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Kinetic Ferromagnetic Ising model:

$$H = -J \sum_{\langle ij \rangle} S_i S_j - h(t) \sum_i S_i$$

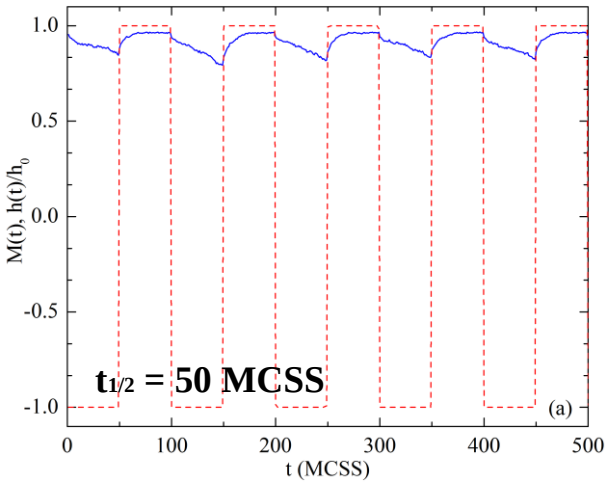
h(t) is a time dependent magnetic field:

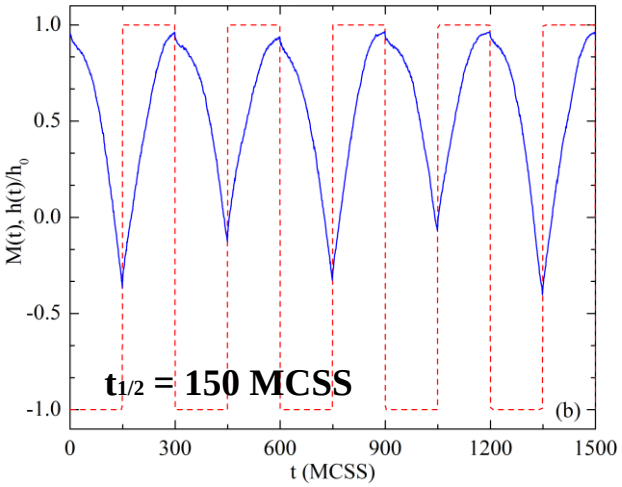
- **Square-wave magnetic field with amplitude h0 and half-period t1/2.**
- **Sinusoidally oscillating field etc.**

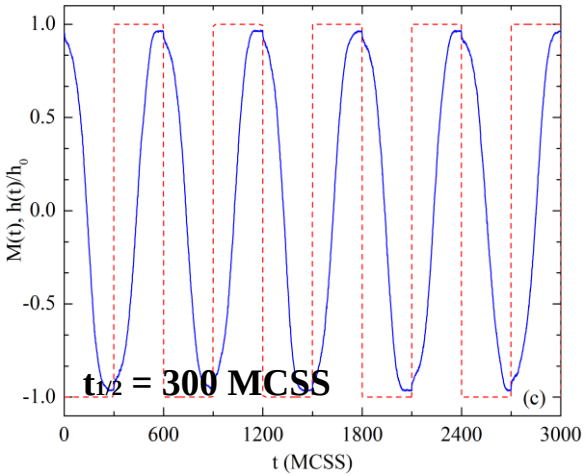
MC simulation details and results:

- **Initial configuration: All spins are up.**
- **Temperature = 0.8Tc (Tc= 3.60495J/kB) and amplitude h0=0.3J**
- **Numerical data were collected over 200 000 period of the field.**

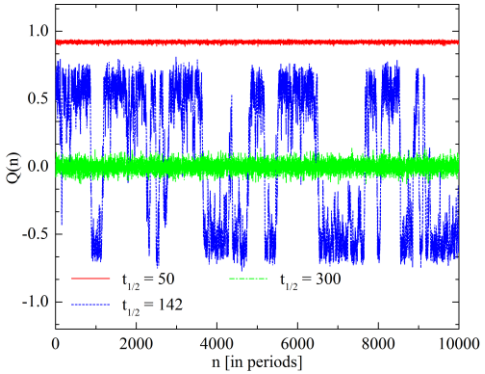
- **Time dependent magnetization:** $M(t) = \frac{1}{L^2} \sum_{i=1}^{L^2} S_i.$



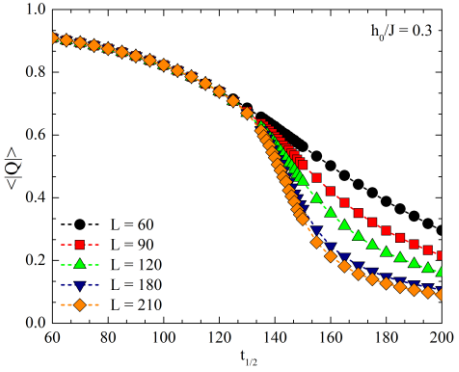




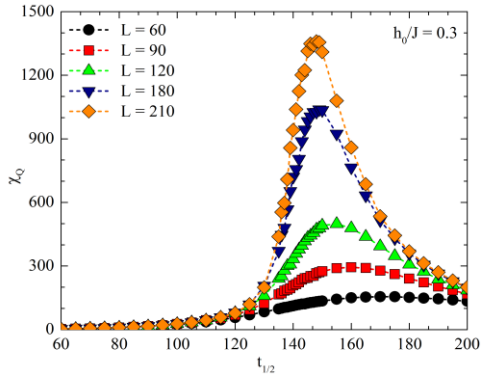
Dynamic order parameter (DOP)



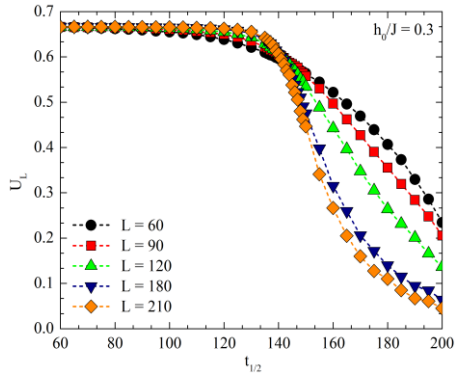
$$Q = \frac{1}{2t_{1/2}} \oint M(t)dt,$$



Variance of DOP and Binder Cumulant

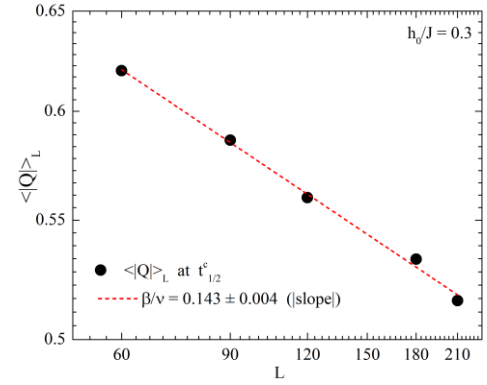


$$\chi_L^Q = L^2\left(\langle Q^2\rangle - \langle |Q|\rangle^2\right).$$

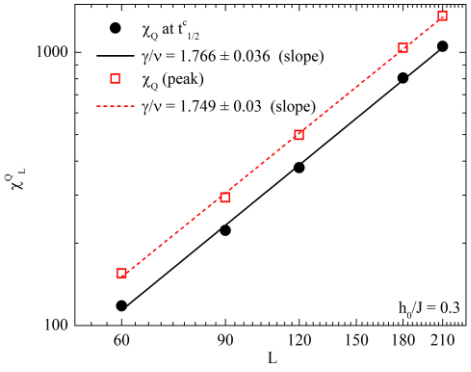


$$U_L = 1 - \frac{\langle Q^4\rangle_L}{3\langle Q^2\rangle_L^2}.$$

Scaling forms of the DOP and Its variance



$$\langle |Q|\rangle_L \propto L^{-\beta/\nu},$$



$$\chi_L^Q \propto L^{\gamma/\nu}.$$