Stochastic Ferromagnetism

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Abstract

The aim of the course is to explain how methods of the theory of stochastic processes can be applied to study ferromagnets. In the beginning of the course I will introduce methods of the theory of Markov chains (Lyapunov-Forster criteria) and spectral methods. Then I will discuss their application to the stochastic Landau-Lifshitz-Gilbert equation (for finite number of spins) and different numerical schemes. In the end I will explain what is known for infinite number of spins and pose unsolved problems.

Time: Tuesday, 16.00-18.00.

Literature:

- A. Guionnet, B. Zegarlinski, *Lectures on logarithmic Sobolev inequalities*, Séminaire de Probabilités, XXXVI, **1801**, 1–134 (2003).

- S. Meyn, R.L. Tweedie, *Stochastic stability of Markov chains*, Springer, New York (1992).

Prerequisits: Knowledge of basics of probability theory and theory of stochastic processes (Markov processes, Itô formula).