Large deviations on the macroscale for an interface in a 1-d Ising model with Kac interaction

Nicolas Dirr, University of Bath
Joint work with G. Manzi and D. Tsagkarogiannis

Abstract

We study the motion of an interface between the two stable phases of a ferromagnetic Ising system from an initial to a final position within fixed time on a diffusive time-space scale. We work with a stochastic microscopic system of Ising spins with Kac interaction evolving in time according to Glauber (non-conservative) dynamics. We derive with alternative methods a cost functional on the mesoscopic scale (i.e. space scaled with interaction range of the Kac interaction) found earlier by F. Comets and we minimize it on the macroscale (space and time scaled diffusively) to find the most probable profile which corresponds to the motion of the interface in the macroscopic scale.