

Title:

Kinetically constrained models out of equilibrium

Abstract:

Kinetically constrained models (KCM) are interacting particle systems proposed in 1984 to describe the dynamical behavior of supercooled liquids. Due to their non-attractiveness and despite significant recent progress on their equilibrium properties, results on KCM out of equilibrium remain scarce. We present the first out of equilibrium results within the universality class of critical KCM.

We are able to show that, in the high temperature regime, there is exponential convergence to the equilibrium measure in infinite volume. We further establish a pre-cutoff for KCM on a finite box in the same regime. While the results hold for all KCM, regardless of the universality class or dimension, we will focus on the most classical one - the Fredrickson-Andersen 2-spin facilitated model, for which no previous progress was available. Emphasis is placed on some aspects of the proof, which involves several interesting ingredients, such as bootstrap percolation, cooperative contact processes, last passage percolation and Toom contours for cellular automata with noise.

The talk is based on joint work with Fabio Toninelli available at <https://arxiv.org/abs/2212.08437>.