“The static and stochastic Ising models”

ABSTRACT: The Ising model, one of the most studied models in mathematical physics, was introduced in 1925 to model ferromagnetism. Over the last three decades, significant effort has been dedicated to the analysis of stochastic dynamical systems that both model the evolution of the Ising model and provide efficient methods for sampling from it. In this talk, I will survey the rich interplay between the behaviors of the static and the dynamical models as they both undergo a phase transition at the critical temperature. In particular, I will discuss recent progress on two fundamental problems on the dynamical model introduced by Glauber in 1963. The talk will assume no prior knowledge on the Ising model and its critical phenomena.