GLAUBER DYNAMICS FOR THE ISING MODEL ON THE SQUARE LATTICE

ALLAN SLY

Introduced in 1963, the Glauber dynamics is one of the most practiced and extensively studied methods for sampling the Ising model on lattices. I will survey a number of new results on the mixing of the dynamics at high, critical and low temperatures. At high temperatures the dynamics exhibits the cutoff phenomena, a sharp transition in the convergence to equilibrium. We show a polynomial upper bound on the mixing time at the critical temperature establishing the conjectured critical slowdown behaviour. Finally, at low temperatures with all plus boundary conditions we prove a quasi-polynomial time upper bound on the mixing time.

Joint work with Eyal Lubetzky, Fabio Martinelli, and Fabio Toninelli.