Zero-Temperature Dynamics and Critical Percolation Scaling Limits

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Abstract. Zero-temperature stochastic Ising models are interacting particle systems on a regular lattice $\mathbb{L}$ that can be obtained as a suitable zero-temperature limit of the stochastic Ising model with Glauber dynamics. They were introduced in the physics literature to study the nonequilibrium dynamics of magnetic systems whose temperature is rapidly reduced. Their behaviour varies drastically according to the lattice $\mathbb{L}$, and for certain lattices they can be used to define dependent percolation models with interesting properties.

I will give a brief survey of some results, conjectures and open problems concerning zero-temperature stochastic Ising models, and then focus on the analysis of the continuum scaling limit of some two-dimensional dependent percolation models generated by such interacting particle systems.

The scaling limit of those percolation models is shown to be the same as that of critical (independent) site percolation on the triangular lattice, whose existence and conformal invariance properties have been recently proved by S. Smirnov.