

# Sharpness results via randomized algorithms

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In these lectures, we will present different techniques developed over the past few years, enabling mathematicians to prove that phase transitions are sharp. We will focus on a few classical models of statistical physics, including Bernoulli percolation, the Ising model and the random-cluster model. In particular, we will prove that the connectivity probabilities of the subcritical random-cluster model decay exponentially fast. The strategy, relying on randomized algorithms, extends to continuum percolation models such as Boolean and Voronoi percolation in arbitrary dimension.