

Crossing probabilities in 2D critical lattice models

Hao Wu

Tsinghua University

E-mail: hao.wu.proba@gmail.com

Abstract: The planar Ising model is one of the most studied lattice models in statistical physics. It was introduced in the 1920s by W. Lenz as a model for magnetic materials. R. Peierls showed in 1936, in two (and higher) dimensions, an order-disorder phase transition in fact occurs at a certain critical temperature. Ever since, there has been active research to understand the 2D Ising model at criticality, where it enjoys conformal invariance in the scaling limit. In this talk, we give crossing probabilities of multiple interfaces in the critical planar Ising model with alternating boundary conditions. Besides, we also explain that a similar formula on the crossing probabilities also holds for critical Percolation and level lines of Gaussian Free Field.