学术报告

报告题目: Connection probabilities for 2D critical lattice models

报 告 人: 吴昊教授（清华大学）

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报告摘要: Conformal invariance of critical lattice models in two-dimensional has been vigorously studied for decades. The first example where the conformal invariance was rigorously verified was the planar uniform spanning tree (together with loop-erased random walk), proved by Lawler, Schramm and Werner around 2000. Later, the conformal invariance was also verified for Bernoulli percolation (Smirnov 2001), level lines of Gaussian free field (Schramm-Sheffield 2009), and Ising model and FK-Ising model (Chelkak-Smirnov et al 2012). In this talk, we focus on connection probabilities of these critical lattice models in polygons with alternating boundary conditions.

This talk has two parts.

- In the first part, we consider critical Ising model and give the crossing probabilities of multiple interfaces. Such probabilities are related to solutions to BPZ equations in conformal field theory.

- In the second part, we consider critical random-cluster model with cluster weight $q \in (0, 4)$ and give conjectural formulas for connection probabilities of multiple interfaces. The conjectural formulas are proved for q=2, i.e. the FK-Ising model.

报告人简介: 吴昊，2009年本科毕业于清华大学数学系，2013年博士毕业于法国巴黎十一大；2013-2017年，先后在美国麻省理工与瑞士日内瓦大学做博士后；2017年，被聘为清华大学长聘教授。吴昊主要研究随机过程Schramm Loewner Evolution、高斯自由场与伊辛模型等经典统计物理模型。主要代表作包含平面统计物理模型边界点连通概率系列工作等。