



复旦大学数学科学学院 数学综合报告会

报告题目: **Scaling Limits of Critical Inhomogeneous Random Graphs**

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报告时间: 2016-12-06 星期二 13:30-14:30

报告地点: 光华东主楼 1801

摘要: Branching processes are known to be useful tools in the study of random graphs, in particular in understanding the appearance of a phase transition in the sizes of the largest clusters of the graphs. Recently, growing interests are paid to inhomogeneous random graphs. In this talk, we look at one particular model of such graphs, called the Poisson random graph, where edges are formed with probabilities proportional to some prescribes weights on the vertices. One challenge in the study of inhomogeneous random graphs is to describe the geometry of the graphs around the critical point. In the case of Poisson random graph, we obtain a simple representation of the graph using Galton-Watson trees (genealogy trees of branching processes). Relying on this representation and previous works of Duquesne & Le Gall on the convergence of Galton-Watson trees, we prove that in the critical window, the scaling limits of the largest components of the Poisson random graphs are a collection of almost-tree-like compact metric spaces, which can be constructed explicitly from the so-called Levy processes without replacement.

Based on a joint work with Nicolas Broutin and Thomas Duquesne.

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