

SCMS & SDS Joint Seminar

JOIN STATISTICS SEMINAR OF SCMS AND SDS

SCALING LIMITS OF INHOMOGENEOUS CRITICAL RANDOM GRAPHS

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Lecture

Time: 3:00-4:00 pm., Friday, Dec. 8, 2017

Venue: Room 2201, East Main Guanghua Tower, Handan Campus

Abstract: For many models of random graphs, as one increases the density of edges, one usually observes a sudden change in structure at a critical density that depends on the model: precisely at that point, a macroscopic "giant component" containing a linear proportion of the nodes starts to emerge. The structure of the graph at the "critical" point of the phase transition does not yet contain any macroscopic component, but many large ones at an intermediate scale, that will quickly merge into a single "giant". Understanding the phase transition and the structure of the "critical" random graphs that one observes just before the birth of the giant has since the first papers of Erdos and Renyi been one of the most fascinating topics in random graphs, and more generally in models related to statistical physics.

I will try paint the big picture and describe some recent results about the scaling limits of all critical rank-one inhomogeneous random graphs. This generalizes concerning the Erdos-Renyi case as well as the inhomogeneous case with "regular power law weights". Our approach relies on a novel representation which allows us to provide a criterion for compactness as well as the computation of the fractal dimensions (box-counting, Hausdorff and packing).

This is joint work with Thomas Duquesne (UPMC) and Minmin Wang (Bath).