Graz University of Technology

Institut für Diskrete Mathematik

Combinatorics Seminar

Friday 26th November 14:15

Online meeting (Webex)

The scaling limit of a critical random directed graph

Christina Goldschmidt

(University of Oxford)

We consider the random directed graph $D(n,p)$ with vertex set $\{1,2,\ldots,n\}$ in which each of the $n(n-1)$ possible directed edges is present independently with probability p. We are interested in the strongly connected components of this directed graph. A phase transition for the emergence of a giant strongly connected component is known to occur at $p = 1/n$, with critical window $p = 1/n + \lambda n^{-4/3}$ for $\lambda \in \mathbb{R}$. We show that, within this critical window, the strongly connected components of $D(n,p)$, ranked in decreasing order of size and rescaled by $n^{-1/3}$, converge in distribution to a sequence of finite strongly connected directed multigraphs with edge lengths which are either 3-regular or loops. This is joint work with Robin Stephenson (Sheffield).

Meeting link:

https://tugraz.webex.com/tugraz/j.php?MTID=ma70275cd258e7748417214793956c7bf

Meeting number: 188 980 7021

Password: ahMZ84fJYQ2

Joshua Erde, Mihyun Kang