Title: Ramsey goodness of bounded degree trees in random graphs.

Abstract

For a graph G, we write that $G \to (K_{r+1}, \mathcal{T}(n, D))$ if every blue-red edge-coloring of G contains a blue K_{r+1} or a red copy of each tree with n edges and maximum degree at most D. In 1977, Chvátal proved that, for every integers r, n, D, $K_N \to (K_{r+1}, \mathcal{T}(n, D)$ if and only if $N \geq rn + 1$. In this work, we extend this result of Chvátal to the context of random graphs. More precisely, we show that there exists a constant $C > 0$ such that if $N \geq rn + C/p$, then with high probability

$$G(N, p) \to (K_{r+1}, \mathcal{T}(n, D))$$

for any $p \geq CN^{-2/(r+2)}$. The bound on N is best possible up to the value of C.

Joint work with Matias Pavez-Signé and Luiz Moreira.