

Institut für Diskrete Mathematik

## Combinatorics Seminar

Friday 3rd June 14:15

AE06 Steyrergasse 30, EG / Webex

# Longest Cycles in Sparse Random Graphs and Where to Find Them

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Let  $L_{c,n}$  be the length of the longest cycle in a sparse binomial random graph  $G_{n,p}$ ,  $p = c/n$ ,  $c > 1$ . Erdős conjectured that if  $c > 1$  then w.h.p.  $L_{c,n} \geq \ell(c)n$  for some strictly positive function on  $(1, \infty)$  that is independent of  $n$ . His conjecture was proved by Ajtai, Komlós and Szemerédi and in a slightly weaker form by Fernandez de la Vega. Henceforward there has been a line of research in trying to bound  $L_{c,n}$  for  $c > 1$ . In this talk we will discuss how one can identify a set of vertices that spans a longest cycle in  $G_{n,p}$  w.h.p for sufficiently large  $p$ . We will then show that  $\frac{L_{c,n}}{n}$  converges to some continuous function  $f(c)$  almost surely which can be evaluated within arbitrary accuracy for  $c > C_0$  where  $C_0$  is a sufficiently large constant. This talk is based on a joint work with Alan Frieze.

Meeting link:

<https://tugraz.webex.com/tugraz/j.php?MTID=m40f85343e56ff5051d731ace1bea82e4>

Meeting number: 2731 089 0467

Password: btHRJxCa252

Joshua Erde, Mihyun Kang