ON THE DIAMETER OF RANDOM k-OUT DIGRAPHS

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In this talk we will discuss about the diameter of a random digraph of order n where every vertex has out-degree k. This model of random digraphs is of special interest since, up to a labeling of the arcs, it models a random deterministic finite automaton. Trakhtenbrot and Barzdin proved in 1973 that with high probability its diameter is $O(\log n)$. We show that for every $k \geqslant 2$ there exists a constant c_k such that the diameter of a random k-out digraph is $(1 + o(1))c_k \log n$ with high probability. This result has some implications on the stationary distribution of a random walk in this model. This is joint work with Louigi Addario-Berry and Borja Balle.