

1135-20-563

MurphyKate Montee* (murphykate.montee@gmail.com). *Random Groups and Cube Complexes*.

In 1993, Gromov introduced the density model of random groups. In this model, we are interested in groups with relators of equal length ℓ . The number of relators is determined by the density d . Properties satisfied by such groups with probability 1 as ℓ tends to infinity are said to hold with overwhelming probability. In this model, many properties exhibit a phase shift at a specific density. For example, random groups are, with overwhelming probability, infinite hyperbolic for $d < \frac{1}{2}$ and trivial for $d > \frac{1}{2}$. Recent work of Ollivier-Wise and Mackay-Przytycki has shown that, with overwhelming probability, random groups at density $d < \frac{5}{24}$ admit a non-trivial action on a CAT(0) cube complex. On the other hand, Żuk and Kotowski-Kotowski have shown that, with overwhelming probability, at density $d > \frac{1}{3}$, a random group satisfies Property (T). This provides an upper bound on the maximal density at which a random group admits a non-trivial action on a CAT(0) cube complex. Recent work hopes to improve the lower bound to $d < \frac{1}{4}$. (Received September 08, 2017)