COVER AND HITTING TIMES OF HYPERBOLIC RANDOM GRAPHS

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ABSTRACT. We study the canonical simple random walk on the giant component of hyperbolic random graphs, in the regime when the degree distribution obeys a power law with exponent in the range $(2, 3)$. We show that up to multiplicative constants and with high probability the cover time is $n(\log n)^2$ and the maximum hitting time is $n \log(n)$. We also establish that the average hitting time is n. We prove these results by determining the effective resistance either between an average vertex and the well connected 'center' of the hyperbolic random graph or between an appropriately chosen collection of extremal vertices.

Ongoing work with Markus Schepers (Johannes-Gutenberg U.), and John Sylvester (U. of Glasgow.)