Meeting: 1005, Newark, Delaware, SS 16A, Special Session on Probabilistic Paradigms in Combinatorics

1005-05-134 **Robert Ellis**, Department of Mathematics, 102 Milner Hall, Texas A&M University, College Station, TX 77843-3368, **Jeremy Martin**, School of Mathematics, University of Minnesota, Minneapolis, MN 55455, and **Catherine Yan*** (cyan@math.tamu.edu), Department of Mathematics, 102 Milner Hall, Texas A&M University, College Station, TX 77843-3368. *On the Diameter of Random Geometric Graphs.* Preliminary report.

The unit ball random geometric graph $G = G_p^d(\lambda, n)$ has as its vertices n points distributed independently and uniformly in the unit ball in $\mathbb{R}^d$, with two vertices adjacent if and only if their ℓ_p-distance is at most λ. In this talk we determine upper and lower bounds for the graph diameter of G, when λ is over the connectivity threshold. We show that almost always, $diam_p(\mathbf{B})(1 - o(1))/\lambda \leq diam(G) \leq diam_p(\mathbf{B})(1 + O((\ln \ln n/ \ln n)^{1/d}))/\lambda$, where $diam_p(\mathbf{B})$ is the ℓ_p-diameter of the unit ball $\mathbf{B}$. (Received February 04, 2005)