On the Diameter of Random Geometric Graphs

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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 $\mathbf{B}$.

This is a joint work with Robert Ellis and Jeremy Martin.