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

1005-05-111 **Paul Balister**, **Béla Bollobás** and **Amites Sarkar*** (asarkar@memphis.edu), Department of Mathematics, University of Memphis, Memphis, TN 38152, and **Mark Walters**. *Connectivity of random geometric graphs.*

Let $\mathcal{P}$ be a Poisson process of intensity one in the square S_n of area n. We join each point of $\mathcal{P}$ to its k nearest neighbours, obtaining the random geometric graph $G(S_n, k)$. How large should k be to make $G(S_n, k)$ connected? I'll discuss upper and lower bounds for this problem. Specifically, let $p(n, k)$ be the probability that $G(S_n, k)$ is connected. I'll show that for $k < 0.3 \log n$, $p(n, k) \to 0$ as $n \to \infty$, and sketch a proof that if $k > 0.52 \log n$, $p(n, k) \to 1$ as $n \to \infty$. (Received February 02, 2005)