

Discrepancy of random points

Benjamin Doerr, École Polytechnique

In this talk, we discuss the star discrepancy of a random point set. We show that there are constants $k, K > 0$ such that for all $N, s \in \mathbb{N}$, $s \leq N$, the point set consisting of s points chosen uniformly at random in the s -dimensional unit cube $[0,1]^s$ with probability at least $1 - e^{-ks}$ admits an axis-parallel rectangle $[0,x] \subseteq [0,1]^s$ containing $K \sqrt{sN}$ points more than expected. Together with the famous upper bound by Heinrich, Novak, Wasilkowski, and Woźniakowski (2001), our result shows that the expected star discrepancy of a random point set is of order $\sqrt{s/N}$.