Geometry Seminar
February 27, 2007, Tuesday, 6:00 p.m.
Room 613, Courant Institute
251 Mercer Street, New York

Weak epsilon nets in convex position: (inverse) Ackermann strikes again

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Abstract

We derive the upper bound $O(r\alpha(r))$ on the size of a weak $(1/r)$-net for a point set in convex position in the plane, and a similar (slightly worse) bound for points in cyclic position in 3-space.

The (planar) problem reduces to the following purely combinatorial problem: Given n and k, construct a set T of triples of integers in $[1, n]$, so that, for any sequence of k (pairwise disjoint and nonempty) consecutive intervals in $[i, n]$, there exists a triple in T that stabs three distinct intervals. We establish a tight bound $\Theta(n\alpha_{(k-1)/2}(n))$ on the size of T.

Joint work with Noga Alon, Haim Kaplan, Gabriel Nivasch, and Shakhar Smorodinsky.

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