Geometry Seminar
March 1, 2005, Tuesday, 6:00 p.m.
Room 613, Courant Institute
251 Mercer Street, New York

Decomposition of multiple coverings

Géza Tóth
Rényi Institute, Hungar. Acad. Sc.

Abstract

A planar set T is said to be cover-decomposable if the following holds. There exists a constant $k = k(T)$ such that every k-fold covering of the plane with translates of T can be decomposed into two coverings. Around 1980, János Pach proposed the problem of determining all cover-decomposable sets and he conjectures that all convex sets are cover-decomposable. He managed to verify his conjecture in two special cases, for centrally symmetric convex polygons, and for the unit disc. We outline his proof for centrally symmetric convex polygons, and show that triangles are also cover-decomposable.

We will also show some non-cover-decomposable sets, and some examples where instead of translates of a set we use some other set systems for the covering.

Joint work with Gábor Tardos.

For further information contact {pach,pollack}@cims.nyu.edu, or visit our website: http://www.math.nyu.edu/seminars/geometry_seminar.html