

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

Topological hypergraphs

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Abstract

We are given a set P of n points in the plane together with a collection C of simple closed curves not passing through any of the points in P . We assign (and identify) each curve in C with the set of points of P that lie in the region bounded by the curve. We thus get a collection of subsets of P , or in other words a hypergraph. We discuss the maximum cardinality of the family C assuming various conditions on the curves in C and on the edges of the resulting hypergraph. In particular, we consider the case when C is a family of pseudo-circles; when the intersection of any two regions bounded by two curves in C is connected; when the hypergraph is k -uniform, etc. We use a variety of tools: probabilistic methods, VC-dimension techniques, extremal graph-theoretic arguments, and more.

Joint work with Eyal Ackerman, Sarit Buzaglo, Kevin Buchin, Christian Knauer, and Günter Rote.

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