Geometry Seminar
November 20, 2007, Tuesday, 6:00 p.m.
Room 613, Courant Institute
251 Mercer Street, New York

A.D. Alexandrov's conjecture and hyperbolic virtual polytopes

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Abstract

We give a 3D illustrated introduction to the theory of hyperbolic (=saddle) virtual polytopes. They appeared as an auxiliary tool for constructing counterexamples to the following conjecture of A.D. Alexandrov: Given a smooth compact convex body K in $\mathbf{R}^3$, if a constant C separates (non-strictly) its principal curvatures at every point of its boundary, then K is a ball. Hyperbolic polytopes link this conjecture with the theory of pointed tilings.

The talk is based on the papers by M. Knyazeva, Y. Martinez-Maure, and the speaker. Some of the pictures are available at http://club.pdmi.ras.ru/≈panina/hyperbolicpolytopes.html

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