Geometry, Topology, and Physics Seminar

Ideal triangulations of hyperbolic manifolds

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Room 6635 South Hall

Abstract: In dimensions 2 and 3 hyperbolic manifolds can be "triangulated" with ideal simplices whose vertices are at infinity. The situation is a bit subtle since the union of these simplices omits a certain subset of the manifold of measure zero. This subset is a geodesic lamination, a generalization of the idea of finite closed (periodic) geodesic. In dimension 2 there is only one shape of ideal 2-simplex (triangle) and there are parameters that describe how these are "glued" giving a parameterization of Teichmuller space. In dimension 3 an ideal 3-simplex (tetrahedron) has shape which is a complex number and these must satisfy certain glueing equations: one per edge of the triangulation. These are related to ideas of Fock and Goncharov for studying higher Teichmuller spaces, and triangulations are used by Dimofte, Gaiotto and Gukov to construct Gauge theories.

This seminar is part of the NSF/UCSB 'Research Training Group' in Topology and Geometry. Information about future meetings can be found at http://www.math.ucsb.edu/~drm/GTPseminar/