

Geometric Group Theory/Théorie géométrique des groupes

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Relatively hyperbolic groups

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Abstract

Hyperbolic groups (and spaces) occupy a central position in the field of geometric group theory. Introduced by Gromov in the 1980s, they generalize the fundamental groups of compact negatively curved manifolds.

Gromov also proposed a notion of a relatively hyperbolic group, which generalizes the fundamental group of a finite volume negatively curved manifold. Such a manifold is not necessarily compact, but consists of a compact part together with a finite number of cusps, each having the geometry of a nilmanifold. (In the special case of constant negative curvature, we get a classical hyperbolic manifold whose cusps are Euclidean.) Once the nilpotent cusp groups are suitably collapsed, the fundamental group of the manifold becomes Gromov-hyperbolic. Thus the original fundamental group is said to be “hyperbolic relative to the cusp groups”.

I will approach the idea of relative hyperbolicity from many different perspectives, and I will describe lots of examples. The talks will be accessible to a graduate student audience.