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ANALYSIS ON BOUNDARIES OF HYPERBOLIC GROUPS

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In the Poincaré ball model, (quasi-)isometries of hyperbolic space induce (quasi-)conformal maps – in fact, (quasi-)Möbius transformations – on the sphere at infinity. Analysis of these boundary mappings was key to Mostow's 1968 proof of rigidity for cocompact lattices in such groups.

General Gromov hyperbolic groups also have a boundary at infinity which can be used to study classification and rigidity properties; indeed, two such groups are quasi-isometric if and only if their boundaries are quasi-Möbius. In this minicourse we will survey how these boundaries have been used to study classification and rigidity questions, with a particular focus on Pansu's conformal dimension. This quasi-isometry invariant measures the infimal Hausdorff dimension of all allowed boundary metrics; in important cases when a metric can be found realising this infimum, analysis on this space has led to rigidity results.