Large scale geometry of Heintze groups

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Negatively curved homogeneous manifolds where characterized by Heintze. Each such manifold is isometric to a solvable Lie group X_α equipped with a left invariant metric, and the group is a semi-direct product $N \rtimes_\alpha \mathbb{R}$ where N is a connected, simply connected, nilpotent Lie group, and α is a derivation of $\mathrm{Lie}(N)$ whose eigenvalues all have positive real parts. Such a group is called a Heintze group.

An important conjecture regarding the large scale geometry of (purely) real Heintze groups states that two such groups are quasi-isometric if, and only if, they are isomorphic.

In this talk I will describe some quasi-isometry invariants, defined by L^p-cohomology methods, and I will show how they can be used in order to understand the quasi-isometry classes of Heintze groups.

Joint work with Emiliano Sequeira (Universidad de la República, Uruguay).