

1. *Bijjective quasi-isometries of amenable groups*. Geometric methods in group theory, 181–188, Contemp. Math., 372, Amer. Math. Soc., Providence, RI, 2005.

Which quasi-isometric groups admit a bijective quasi-isometry between them?

Whyte proved that any quasi-isometry between non-amenable finitely generated groups is at bounded distance from a bijection. We show that in the case of amenable groups even subgroup inclusion is not a bounded distance from a bijection.

2. *Large scale geometry of certain solvable groups*. To appear in GAFA, 2009.

We develop a boundary theory for the solvable Lie groups $G_M = \mathbb{R} \ltimes_M \mathbb{R}^n$ where M is diagonalizable matrix with no eigenvalues on the unit circle. We show that the boundary maps induced by a uniform group of quasi-isometries of G_M can be conjugated into the group of almost isometries. This is the final step needed for proving quasi-isometric rigidity of the class polycyclic groups which are lattices in G_M .

3. *Bilipschitz equivalence is not equivalent to quasi-isometric equivalence for finitely generated groups*. To appear in Duke Mathematical Journal, 2009.

For discrete spaces, a bilipschitz equivalence is the same as a bijective quasi-isometry. We provide examples of finitely generated groups that are quasi-isometric but that do not admit a bijective quasi-isometry. By Whyte's result, mentioned above, these groups are necessarily amenable.

4. *Bilipschitz maps of boundaries of certain negatively curved homogeneous spaces*. Preprint 2009. (with I. Peng).

We extend the results of 2. to include nondiagonalizable M . This involves additional boundary analysis and modifications of key technical lemmas and propositions.

5. *Rigidity with locally compact targets for certain solvable groups*. In preparation.

Let $BS(1, n) = \langle a, t \mid tat^{-1} = a^n \rangle$. We show that up to compact kernel the only locally compact groups admitting $BS(1, n)$ as a lattice are $Isom(X_m)$ where X_m is the standard model space of $BS(1, m)$. We obtain similar results for other classes of solvable groups.