Property (T) and actions on the circle: what is known and what is unknown (2 talks)

We will survey on several results giving obstructions to actions on the circle for groups with property (T) or similar. We will also discuss some interesting examples lying in the border between rigidity and interesting dynamics. For instance, we will see that the relative Kazhdan pair $(SL(2,Z) \ltimes Z^2, Z^2)$ acts faithfully by Lipschitz homeomorphisms, though it does not embed into the group of C^1 diffeomorphisms.

A center lemma for the space of continuous functions and its dynamical counterpart (1 talk)

It follows from a theorem of Banach and Mazur that every action by isometries on the space of continuous functions $C(X, R^n)$ comes from an action by homeomorphisms of the basis X (a compact metric space) and a cocycle of isometries on the fiber. Although $C(X, R^n)$ is not uniformly convex, we will see that, if the action on the basis is minimal, then the existence of a bounded orbit implies that of a fixed point (function). We will see that this is strongly related to classical results in Dynamical Systems by Gottschalk, Hedlund, and Besicovich, among others. Some interesting examples will be discussed. (Joint work with D. Coronel and M. Ponce.)

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