

ACTIONS OF METRIC GROUPS AND CONTINUOUS LOGIC

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Typical properties of groups formulated in terms of actions on metric spaces are not axiomatizable. The most important examples of such properties are amenability, property **(T)** of Kazhdan or property **FR** that any continuous isometric action of G on a real tree has a fixed point.

One of substitutes of axiomatizability is the following notion of Ph.Hall. A class of topological groups \mathcal{K} is called *bountiful* if for any infinite group G from \mathcal{K} and any subset C of G there is H in \mathcal{K} which is a subgroup of G , contains C and the density character of C coincides with the density character of H .

We introduce a stronger property and verify it in many situations. In order to realize this we show how isometric actions of metric groups on Hilbert spaces and real trees can be presented in continuous logic.