

Logic Seminar

A topological zero-one law and elementary equivalence of finitely generated groups

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Abstract: The space of finitely generated marked groups, denoted by \mathcal{G} , is a locally compact Polish space whose elements are groups with fixed finite generating sets; the topology on \mathcal{G} is induced by local convergence of the corresponding Cayley graphs. I will describe a necessary and sufficient condition for a closed subspace $\mathcal{S} \subseteq \mathcal{G}$ to satisfy the following zero-one law: for any sentence σ in the infinitary logic $\mathcal{L}_{\omega_1, \omega}$, the set of all models of σ in \mathcal{S} is either meager or comeager. In particular, the zero-one law holds for certain subspaces associated to hyperbolic groups. This leads to the following (somewhat unexpected) corollary: generic limits of non-cyclic, torsion-free, hyperbolic groups are elementarily equivalent. We will discuss other applications and open problems.

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