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Finitely F-amenable actions and decomposition complexity of groups

Abstract: In their groundbreaking work on the Farrell-Jones Conjecture for Gromov hyperbolic groups, Bartels, Lück and Reich introduced certain geometric conditions on a group that imply this conjecture. These conditions have since been reformulated by Bartels in terms of the existence of a "finitely F-amenable group action" (where F is a family of subgroups) on a suitable space in his work on the Farrell-Jones Conjecture for relatively hyperbolic groups. In this talk we will discuss some coarse geometric applications of finitely F-amenable group actions. One application states that if G is a countable group that is relatively hyperbolic with respect to peripheral subgroups that are contained in a collection of metric families that satisfies some basic permanence properties, then G is also contained in that collection. This is joint work with Andrew Nicas.