

Embedding groups into acyclic groups via étale groupoids

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Abstract.

The Thompson group V , introduced in 1965, is the group of automorphisms of Cantor space respecting a certain binary tree-like structure. It has since inspired many families of “Thompson-like” groups building on this prototype, which are important objects of study in group theory, providing examples of groups with unexpected properties. In particular, there is a *labelled Thompson group* $V(G)$ for every group G and a *twisted Brin-Thompson group* SV_G for every faithful action of a group G on a set S .

I will describe recent joint work with Xiaolei Wu in which we prove that all labelled Thompson groups and all twisted Brin-Thompson groups are *acyclic*, i.e. their homology is trivial in all degrees. This has many interesting consequences for group embeddings: for example every group of finiteness type F_n embeds into an acyclic group of the same finiteness type (extending results from the early 80s for $n = 1$ and $n = 2$). Our result extends a theorem of M. Szymik and N. Wahl who proved that the original Thompson group V is acyclic. However, our methods are different: we use a recent theorem of X. Li that relates acyclicity of topological full groups to the homology of étale groupoids.