

The isomorphism problem for groups acting on trees

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A finitely generated group G_n that acts on a tree T such that all edge stabilizers are infinite cyclic groups and all vertex stabilizers are free abelian groups of rank n will be called a *generalized Baumslag–Solitar group of type $(n, 1)$* ($GBS(n, 1)$ group).

According to the Bass–Serre theorem, every $GBS(n, 1)$ group G_n can be represented as $\pi_1(\mathbb{A})$ the fundamental group of a graph of groups $\mathbb{A}$, where each edge group is infinite cyclic and each vertex group is a free abelian group of rank n . A $GBS(1, 1)$ group is called a *generalized Baumslag–Solitar group* (GBS group). The isomorphism problem for $GBS(n, 1)$ groups, even in the case $n = 1$, has only been solved in some special cases and, in general, remains a difficult open problem. G. Levitt, M. Forester, M. Clay, D. Wang and others proposed solutions to this problem for special cases.

We study $GBS(n, 1)$ groups with a non-trivial center and prove that the isomorphism problem for such groups is closely related to the isomorphism problem for GBS groups with a non-trivial center (which is decidable).

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