Quasi-isometry invariants from decorated trees

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Abstract: There is a simple quasi-isometry invariant that can be deduced from the tree of cylinders of a finitely presented, one-ended group that admits a splitting over two-ended subgroups. This invariant can be strengthened in the case that the vertex groups of the splitting are quasi-isometrically rigid relative to the incident edge groups. One case of particular interest that satisfies the relative rigidity requirement is that of a one-ended, finitely presented group whose two-ended JSJ decomposition has free groups for all of its vertex groups. We show that such groups are surprisingly rigid.