Mitra, Mahan

Cannon-Thurston maps for hyperbolic group extensions. (English) Zbl 0907.20038

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For a hyperbolic group K in the sense of *M. Gromov* [in Essays in group theory, Publ., Math. Sci. Res. Inst. 8, 75-263 (1985; Zbl 0634.20015)], the Cayley graph Γ_K with respect to a finite set of generators admits a compactification $\widehat{\Gamma}_K$; this compactification is obtained by adding the Gromov boundary, which consists of classes of asymptotes of geodesics, to Γ_K. Given a hyperbolic group G and a normal subgroup H thereof which is itself a hyperbolic group, together with a finite set of generators for G and one for H, there is a continuous proper embedding i of the Cayley graph Γ_H into the Cayley graph Γ_G of G; the main result of the paper says that the inclusion i extends to a continuous map from $\widehat{\Gamma}_H$ to $\widehat{\Gamma}_G$ (which is necessarily unique). When G is the fundamental group of a closed hyperbolic 3-manifold fibering over the circle and when H is the fundamental group of the fibre, this result reduces to one of Cannon and Thurston.

Reviewer: J.Huebschmann (Villeneuve d'Ascq)

MSC:

20F65 Geometric group theory
57M07 Topological methods in group theory
20F34 Fundamental groups and their automorphisms (group-theoretic aspects)
20E22 Extensions, wreath products, and other compositions of groups
57M50 General geometric structures on low-dimensional manifolds

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hyperbolic groups; hyperbolic group extensions; compactifications of Cayley graphs; finitely generated groups

Full Text: DOI