Title:	Boundaries of Negatively Curved Groups and Cannon-Thurston Maps
Authors:	Tomar, Ravi
Keywords:	Negative Canon Map
Issue Date:	May-2023
Publisher:	IISER Mohali
Abstract:	Abstract. Bass-Serre introduced the notion of graphs of groups. These can be described as groups acting on simplicial trees. A natural higher dimensional analogue of graphs of groups is the notion of complexes of groups. In this thesis, we address some questions related to the boundaries of the fundamental group of certain complexes of groups. In the first part of the thesis, we study combination theorems for convergence and relatively hyperbolic groups. We prove that the fundamental group of a finite graph of convergence groups with parabolic edge groups is a convergence group. Consequently, we deduce that the fundamental group of a finite graph of convergence groups with a dynamically malnormal family of dynamically quasiconvex edge groups is a convergence group. Then we show that the fundamental group G of a graph of relatively hyperbolic groups with edge groups either parabolic or infinite cyclic is relatively hyperbolic and give an explicit construction of the Bowditch boundary of G. Next, we show that the homeomorphism type of the Bowditch boundary of the fundamental group of a finite graph of relatively hyperbolic groups with parabolic edge groups is determined by the homeomorphism types of the Bowditch boundaries of vertex groups. In the second part, we look at the boundaries of coned-off spaces and deduce the existence of Cannon-Thurston maps for certain subcomplexes of groups of a complex of hyperbolic groups. Suppose Y is a finite simplicial complex and (G, Y) is a developable complex of hyperbolic groups such that all the local maps are quasiisometric embeddings. Let Y 1 □ Y and let (G, Y 1) be the complex of groups obtained by restricting (G, Y) to Y 1 . Let H, G be the fun- damental groups of (G, Y 1), (G, Y), respectively. Suppose H, G are hyperbolic groups. Lastly, suppose the natural map H → G is injective and all the local groups of (G, Y) are quasiconvex in G. We prove that if the natural map from the universal cover of (G, Y 1) to the universal cover of (G, Y) satisfies Mitra's criterion then the inclusion H → G admits a Cannon-Thurston map. Finally, we deduce a number of applications
URI:	http://hdl.handle.net/123456789/5344
Appears in Collections:	PhD-2017

Files in This Item:

File	Description	Size	Format	
thesis_revised-ph17020.pdf		2.19 MB	Adobe PDF	View/Open

Show full item record

Admin Tools

Edit...
Export Item
Export (migrate) Item
Export metadata