

SEMI-STABILITY OF AMALGAMATED PRODUCTS, HNN-EXTENSIONS, AND ALL ONE-RELATOR GROUPS

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1. INTRODUCTION

Semistability at infinity is a geometric property used in the study of ends of finitely presented groups. If a finitely presented group G is semistable at infinity, then sophisticated invariants for G , such as the fundamental group at an end of G , can be defined (see [10]). It is unknown whether or not all finitely presented groups are semistable at infinity, although by [16] it suffices to know whether all 1-ended finitely presented groups are semistable at infinity. There are a number of results showing many 1-ended groups have this property, e.g., if G is finitely presented and contains a finitely generated, infinite, normal subgroup of infinite index, then G is semistable at infinity (see [12] and for other such results [13-15]).

Semistability at infinity is of interest in the study of cohomology of groups; if a finitely presented group G is semistable at infinity, then $H^2(G; \mathbb{Z}G)$ is free abelian (see [6, 7]). This is conjectured to be true for all finitely presented groups, but at present it is not even known for 2-dimensional duality groups (where one is discussing the dualizing module, see [2]).

For negatively curved groups (i.e., hyperbolic groups in the sense of Gromov, see [8]), semistability at infinity has additional interesting consequences. If a negatively curved group G is given the word metric with respect to some finite generating set, then there is a compactification $\overline{G}$ of G where a point of $\partial G = \overline{G} - G$ is a certain equivalence class of proper sequences of points in G . The boundary of G is a compact, metrizable, finite-dimensional space, which determines the cohomology of G . Bestvina and Mess have shown that if G is a negatively curved group, then for every ring R , there is an isomorphism of RG -modules $H^*(G; RG) \cong H^{n-1}(\partial G; R)$ (Čech reduced). Geoghegan has observed that results in [1] imply that a negatively curved group G is semistable at infinity iff ∂G has the shape of a locally connected continuum (see [6]). Furthermore, in [1], ideas closely related to semistability at infinity are used to analyze closed irreducible 3-manifolds with negatively curved fundamental group.

A continuous map is *proper* if inverse images of compact sets are compact. Proper rays $r, s: [0, \infty) \rightarrow K$ in a locally finite CW-complex K are said to *converge to the same end* of K if for every compact $C \subseteq K$ there exists an N such that $r([N, \infty))$ and $s([N, \infty))$ are contained in the same path component of $K - C$. A locally finite

1991 *Mathematics Subject Classification*. Primary 20F32; Secondary 20B06, 57M20.

Key words and phrases. Semistability at infinity, amalgamated products, HNN-extensions, one-relator groups, group cohomology, finitely presented groups, proper homotopies.

Received by the editors August 28, 1990 and, in revised form, June 30, 1991

Semistability Of Amalgamated Products And Hnn Extensions

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Semistability Of Amalgamated Products And Hnn Extensions:

This book delves into Semistability Of Amalgamated Products And Hnn Extensions. Semistability Of Amalgamated Products And Hnn Extensions is a crucial topic that must be grasped by everyone, from students and scholars to the general public. This book will furnish comprehensive and in-depth insights into Semistability Of Amalgamated Products And Hnn Extensions, encompassing both the fundamentals and more intricate discussions.

1. This book is structured into several chapters, namely:
 - Chapter 1: Introduction to Semistability Of Amalgamated Products And Hnn Extensions
 - Chapter 2: Essential Elements of Semistability Of Amalgamated Products And Hnn Extensions
 - Chapter 3: Semistability Of Amalgamated Products And Hnn Extensions in Everyday Life
 - Chapter 4: Semistability Of Amalgamated Products And Hnn Extensions in Specific Contexts
 - Chapter 5: Conclusion
 2. In chapter 1, this book will provide an overview of Semistability Of Amalgamated Products And Hnn Extensions. This chapter will explore what Semistability Of Amalgamated Products And Hnn Extensions is, why Semistability Of Amalgamated Products And Hnn Extensions is vital, and how to effectively learn about Semistability Of Amalgamated Products And Hnn Extensions.
 3. In chapter 2, this book will delve into the foundational concepts of Semistability Of Amalgamated Products And Hnn Extensions. This chapter will elucidate the essential principles that need to be understood to grasp Semistability Of Amalgamated Products And Hnn Extensions in its entirety.
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 5. In chapter 4, the author will scrutinize the relevance of Semistability Of Amalgamated Products And Hnn Extensions in specific contexts. The fourth chapter will explore how Semistability Of Amalgamated Products And Hnn Extensions is applied in specialized fields, such as education, business, and technology.
 6. In chapter 5, this book will draw a conclusion about Semistability Of Amalgamated Products And Hnn Extensions. The final chapter will summarize the key points that have been discussed throughout the book.
- The book is crafted in an easy-to-understand language and is complemented by engaging illustrations. This book is highly recommended for anyone seeking to gain a comprehensive understanding of Semistability Of Amalgamated Products And Hnn Extensions.

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