

**ADDENDUM TO MEDIAN STRUCTURES ON
ASYMPTOTIC CONES AND HOMOMORPHISMS INTO
MAPPING CLASS GROUPS**

JASON BEHRSTOCK, CORNELIA DRUȚU AND MARK SAPIR, REVIEWED BY
THOMAS KOBERDA

The authors prove that if a finitely presented group G admits infinitely many non-conjugate homomorphisms into the mapping class group of a surface, then G virtually splits, i.e. acts nontrivially on a simplicial tree. This result can be thought of as a rank-one phenomenon for the mapping class group. One can contrast this result with an example due to Kassabov which shows that $\mathrm{SL}_3(\mathbb{Z}[x])$ admits infinitely many non-conjugate homomorphisms into $\mathrm{SL}_3(\mathbb{Z})$ which are induced by ring homomorphisms $\mathbb{Z}[x] \rightarrow \mathbb{Z}$.

Aside from the authors' work, the main result they use is a proposition from a recent preprint of Bestvina, Bromberg and Fujiwara. That result says that there exists a finite index subgroup $BBF(S)$ of the mapping class group $MCG(S)$ such that the set of subsurfaces can be partitioned into a finite number of subsets C_1, \dots, C_s , each of which is an orbit under $BBF(S)$, and any two subsurfaces in the same subset overlap and have the same complexity.

DEPARTMENT OF MATHEMATICS, HARVARD UNIVERSITY, 1 OXFORD ST., CAMBRIDGE,
MA 02138

E-mail address: `koberda@math.harvard.edu`