

The homology of big mapping class groups

Martin Palmer-Anghel

Workshop for Young Researchers in Mathematics — Iași — 18–19 May 2023

Abstract.

“Big mapping class groups” — mapping class groups of infinite-type surfaces — have recently become the subject of intensive study, having connections for example with dynamical systems and geometric group theory. However, their homology (beyond degree 1) has so far been very little understood. I will describe two results, from joint work with Xiaolei Wu, that exhibit contrasting behaviour of the homology of big mapping class groups. First, using methods of homological stability, we find an uncountable family of big mapping class groups whose integral homology vanishes in all positive degrees. Second, by entirely different methods, we find another uncountable family of big mapping class groups whose integral homology is uncountable in each positive degree.