The homology of big mapping class groups

Martin Palmer-Anghel

Workshop: "Homotopy: fruit of the fertile furrow" — INI, Cambridge — 12–16 June 2023

Abstract.

Mapping class groups of infinite-type surfaces ("big mapping class groups") have recently become the subject of intensive study, inspired by their connections with dynamical systems and geometric group theory. However, their homology above degree one 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 (including notably the mapping class group of the disc minus a Cantor set) 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.