On the homology of the mapping class group of the Loch Ness monster

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Abstract.

The Madsen-Weiss theorem may be viewed as a calculation of the homology of the compactly-supported mapping class group of the infinite-genus surface L sometimes called the "Loch Ness monster surface". In contrast, the homology of the full (not necessarily compactly-supported) mapping class group $\mathrm{Mod}(L)$ of L is much less well-understood. I will talk about joint work with Xiaolei Wu in which we prove that the homology of $\mathrm{Mod}(L)$ is uncountably generated in every positive degree, but that the dual Miller–Morita–Mumford classes vanish on $\mathrm{Mod}(L)$. I will also discuss the analogous questions for other infinite-type surfaces, including a complete calculation of the homology of $\mathrm{Mod}(S)$ when S is the plane minus a Cantor set.