

Kernels of homological mapping class group representations

Martin Palmer-Anghel // GeMAT seminar, IMAR // May–June 2026

Abstract.

There are several different strategies for constructing interesting representations of mapping class groups of surfaces. The most topological strategy is to study their action on the homology of configuration spaces on the underlying surface. This produces a wide variety of representations, depending on the number of configuration points, whether they are ordered or unordered, the flavour of homology one considers (ordinary, Borel–Moore, etc.) and especially the choice of local system in the coefficients of homology.

This will be a short series of expository talks discussing these *homological mapping class group representations*. Motivated by the long-standing open question of whether mapping class groups are linear (admit faithful finite-dimensional representations over a field), I will focus on what is known about their kernels.

Talks.

1. Friday 22 May — Introduction/motivation and a sketch of Moriyama’s 2007 proof that the kernels of the family of *Moriyama representations* coincide with the *Johnson filtration* of the mapping class group.
2. Friday 29 May
3. Friday 5 June