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Finitely-presented big mapping class groups

(Joint work with Louis Funar.) In this talk, we will define the "asymptotically rigid" mapping class group B_g of genus g. The group B_g is a subgroup of the mapping class group of a certain infinite-type surface, and contains the mapping class group of every compact surface of genus $\leq g$ with non-empty boundary.

The group B_g turns out to be finitely presented, and its k-th homology group coincides with the k-th stable homology of the mapping class group of genus g, for k small enough with respect to g.

We then proceed to prove that the family of groups so obtained enjoys a number of properties analogous to known results for finite-type mapping class groups. More concretely, there are no (weakly) injective maps $B_h \to B_g$ if $g < h$, every automorphism of B_g is geometric, and every homomorphism from a higher-rank lattice to B_g has finite image.

In addition to the translation of classical results about finite-type mapping class groups, we will show that B_g is not linear, and does not have Kazhdan's Property (T).