

# Nori connectivity for squared hypersurfaces and classicality of the motivic Galois group

*Tuesday, 11 June 2024 11:30 (1 hour)*

Let  $X$  be a smooth and projective variety of dimension  $n + 1$  and let  $f: \mathcal{Y} \rightarrow S$  be the universal family of smooth hypersurfaces in  $X$  of a fixed degree. Assuming that the degree is sufficiently large, Nori proved that the cohomology of the base change  $\mathcal{Y} \times_S T$  of  $\mathcal{Y}$  along a smooth morphism  $T \rightarrow S$  coincides with the cohomology of  $X \times T$  up to degree  $2n - 1$ . In particular, this gives a simple way to compute the cohomology of the local system  $(R^n f_* \mathbb{Q})_{\text{prim}}$  up to degree  $n - 1$ , and after base change by any smooth morphism.

We propose a version of Nori's theorem for the self product  $\mathcal{Y} \times_S \mathcal{Y}$  of the universal family. This will yield information on the higher endomorphisms of the local system  $(R^n f_* \mathbb{Q})_{\text{prim}}$ . We hope to use these endomorphisms to rule out the existence of positive degree operations on rational Betti cohomology and hence proving that the motivic Galois group is classical.

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