

# Geometric monodromy - semi simplicity and maximality

Anna Cadoret

Let  $X$  be a connected scheme, smooth and separated over an algebraically closed field  $k$  of characteristic  $p$ , let  $f : Y \rightarrow X$  be a smooth proper morphism and  $x$  a geometric point on  $X$ . We show that the tensor invariants of bounded length  $d$  of the étale fundamental group  $\pi_1(X)$  acting on the étale cohomology groups  $H^*(Y_x, \mathbb{F}_\ell)$  are the reduction modulo  $\ell$  of the tensor invariants of  $\pi_1(X, x)$  acting on  $H^*(Y_x, \mathbb{Z}_\ell)$  for  $\ell$  large enough depending on  $f : Y \rightarrow X$  and  $d$ . We use this result to discuss semisimplicity and maximality issues about the image of  $\pi_1(X, x)$  on  $H^*(Y_x, \mathbb{Z}_\ell)$ . This is a joint work with Chun-Yin Hui and Akio Tamagawa.