

## Generic representations of linear groups : grassmannian functors categories, with applications to the artinian conjecture

The aim of this work is to study the global structure of the category  $\mathcal{F}$  of functors between  $\mathbb{F}_2$ -vector spaces, particularly the *artinian conjecture*, which is equivalent to the locally noetherian character of this category. We show that the tensor product between a finite functor and the standard projective functor  $P^{\otimes 2}$  associated to a vector space of dimension 2 is noetherian.

For this, we introduce other functors categories, named *grassmannian functors categories*. They permit to formulate a very strong form of the artinian conjecture, describing the Krull filtration of the category  $\mathcal{F}$ . Our *generalized simplicity theorem* proves a weak version of this conjecture. It allows to show the above result about the structure of  $P^{\otimes 2} \otimes F$  (with  $F$  finite), that we have also proved using internal hom functors and considerations from modular representations theory.

We describe the rich algebraic structure of the grassmannian functors categories, equivalent to categories of comodules in  $\mathcal{F}$ . Our main cohomological vanishing theorem generalizes a lot of known results in functors cohomology. It permits also to generalize a key step in Suslin's proof of the isomorphism between stable K-theory and Mac Lane homology for polynomial coefficients.