

FINITENESS PROPERTIES IN FUNCTOR CATEGORIES

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Functor categories from various categories to module categories appear in several areas of algebra and topology: homotopy theory, representation theory, group (co)homology... But the global structure of these nice abelian categories (in particular, the following questions: are they locally noetherian? Can one describe their Krull filtration?) is often very hard to understand.

After reminders on functor categories and their use, we will present some old and very recent results in this direction, especially the spectacular proof by Putman, Sam and Snowden of a conjecture of Lannes and Schwartz: the category of endofunctors of vector spaces over a finite field is locally noetherian. The proof of this result is combinatorial; for other problems, methods from representation theory, homological algebra and the notion of polynomial functor are key ingredients.