

ENDO-PERMUTATION MODULES

ABSTRACT. In the late seventies, Dade defined the endo-permutation modules as certain (finite dimensional) representations for finite p -groups in prime characteristic p , and he started a classification. This has been achieved in 2006, by Bouc. There are various motivations behind the study of endo-permutation modules: they are sources for simple modules for finite p -solvable groups, and they appear in the description of block algebras of finite groups. Among endo-permutation modules, the particular class of endotrivial modules form an important part of the Picard group of the stable module category, and these modules induce self equivalences of this category. Their classification was obtained by Carlson and Thévenaz, in 2004.

At present, the investigations surrounding endo-permutation and endotrivial modules are still ongoing. Firstly, the concepts have been extended twofold: to arbitrary finite groups and to fusion systems on p -groups. Secondly, the question of ‘gluing endo-permutation modules’ is still open.

In this talk, we will survey the topic of endo-permutation modules: from the original definition to the current ones, as well as the up-to-date status of related research.