

AbstractsCRM00 j00

The Picard group of the stable module category of a finite group

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The Picard group of the stable module category of a finite group plays a role in many parts of modular representation theory, and is also called the group of endotrivial modules. It was calculated when the group is an abelian p -group, by pioneering work of Dade in the 1970's, and a classification for all p -groups was obtained by Carlson-Thevenaz in the early 2000's in a series of works. In my talk I'll explain how to use methods from homotopy theory and higher algebra to describe this Picard group for an arbitrary finite group G . I'll also explain general features of the calculation, which can be used to describe Picard groups related to finite groups in other settings in algebra and topology. Part of this talk is joint work with Tobias Barthel and Joshua Hunt.