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DIAGONAL p -PERMUTATION FUNCTORS

Deniz Yılmaz

Université de Picardie Jules Verne

Abstract

Let k be an algebraically closed field of positive characteristic p and let \mathbb{F} be an algebraically closed field of characteristic 0. In this talk we introduce diagonal p -permutation functors: consider the \mathbb{F} -linear category $\mathbb{F}pp_k^\Delta$ of finite groups, in which the set of morphisms from G to H is the \mathbb{F} -linear extension of the Grothendieck group of p -permutation (kH, kG) -bimodules with (twisted) diagonal vertices. We call the \mathbb{F} -linear functors from $\mathbb{F}pp_k^\Delta$ to $\mathbb{F}\text{-Mod}$ as *diagonal p -permutation functors*.

We first consider the diagonal p -permutation functor of the p -permutation ring. We then show that the category of diagonal p -permutation functors is semisimple and give a description of the evaluations of simple functors at finite groups. Finally, we introduce the diagonal p -permutation functors arising, in a natural way, from the blocks of finite groups and show that p -permutation equivalent blocks give rise to isomorphic functors. This is joint work with Serge Bouc.

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