

Ghosts and strong ghosts in the stable category

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Abstract. Suppose that G is a finite group and k is a field of characteristic $p > 0$. A *ghost map* is a map in the stable category of finitely generated kG -modules which induces the zero map in Tate cohomology in all degrees. In an earlier paper we showed that the thick subcategory generated by the trivial module has no nonzero ghost maps if and only if the Sylow p -subgroup of G is cyclic of order 2 or 3. In this paper we introduce and study variations of ghost maps. In particular, we consider the behavior of ghost maps under restriction and induction functors. We find all groups satisfying a strong form of Freyd's generating hypothesis and show that ghosts can be detected on a finite range of degrees of Tate cohomology. We also consider maps which mimic ghosts in high degrees.