Twisted group algebras, normal subgroups, and derived equivalences

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ABSTRACT

We investigate the connection between Broué's abelian defect group conjecture and Dade's Inductive Conjecture (which counts characters in blocks also taking Clifford extensions into account), by using stable and derived equivalences induced by group graded bimodules. An important point is that these equivalences preserve the Clifford theoretical invariants which appear in Dade's conjecture. We also need to extend parts of block theory in order to deal with twisted group algebras. In particular, we show that the so called p-monomial modules (a generalization of modules with trivial source) behave well with respect to the Brauer construction. As a main result, we verify the above conjectures in the case of p'-extensions of blocks with cyclic defect groups.

References

1. E.C. Dade, *Counting characters in blocks with cyclic defect groups I*, J. Algebra **186** (1996), 934–969.

2. S. König and A. Zimmermann, *Derived Equivalences for Group Rings*, Lecture Notes in Mathematics **1685**, Springer-Verlag, Berlin 1998.

3. A. Marcus, *Derived equivalences and Dade's Invariant conjecture*, J. Algebra **221** (1999), 513–527.

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