

Title: On Duality Inducing Automorphisms and Sources of Simple Modules of Finite Groups.

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Abstract: Let  $k$  be an algebraically closed field of prime characteristic  $p$  and  $G$  a finite group. To every indecomposable  $kG$  module,  $M$ , is associated a  $G$ -conjugacy class of pairs  $(Q, V)$ , where  $Q$  is a  $p$ -subgroup of  $G$  and  $V$  is an indecomposable  $kQ$ -module; such a pair is called a vertex-source pair of  $M$ . If  $M$  is simple, then it is known that in many cases, the source  $V$  is an endo-permutation  $kQ$ -module, for instance if  $G$  is a  $p$ -solvable group or if  $M$  lies in a nilpotent  $p$ -block of  $kG$ . My talk will center around the following problem: Given a  $p$ -group  $Q$ , which indecomposable endo-permutation  $kQ$  modules  $V$  have the property that  $(Q, V)$  is a vertex source pair of a simple module of a finite group?

I will present some results that indicate that the presence of duality inducing automorphisms in finite classical groups force such modules  $V$  to have finite order in the Dade group of  $Q$ .