

# On Brauer indecomposability of Scott modules

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Let  $p$  be a prime number and  $k$  be an algebraically closed field of characteristic  $p$ . Brauer indecomposability of  $p$ -permutation modules is important for obtaining categorical equivalences between  $p$ -blocks of finite groups as stated in Broué's Abelian Defect Group Conjecture. There is a close relationship between Brauer indecomposability of  $p$ -permutation modules and saturated fusion systems. For a finite group  $G$  and a  $p$ -subgroup  $P$  of  $G$  Kessar, Kunugi and Mitsuhashi showed if a  $p$ -permutation  $kG$ -module with vertex  $P$  is Brauer indecomposable, then  $\mathcal{F}_P(G)$  is a saturated fusion system. They also showed the converse of this statement is not true. However, when the module is taken to be a Scott module, there are some special cases where the converse is also true. In this talk, I will first give a survey of known results in this context then I will present some new results. This is an ongoing joint work with S. Koshitani.