

Domination of blocks, fusion systems and hyperfocal subgroups

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In the context of modular representation theory of finite groups, considering a finite group G , an algebraically closed field k of characteristic p , a block b of kG and a maximal Brauer (D, e) , the block b is inertial if b and e lie in a special type of Morita equivalence. A particular situation of this equivalence makes b into a nilpotent block. For a normal p -subgroup P of G , setting $\bar{G} := G/P$, the G -acted epimorphism of group algebras $\pi : kG \rightarrow k\bar{G}$ determines the connection between b and its dominating blocks. We investigate the connections between some properties of blocks and of their dominating blocks. We find conditions to verify that a block is inertial if and only if its dominating block is inertial. In some situations the equality of the factor fusion systems associated with a block and with its Brauer correspondent block give information about the hyperfocal subgroups.

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