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Galois action on the principal block

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One year ago I spoke at this seminar about a reduction theorem for the celebrated Galois–McKay conjecture. This time I will discuss on consequences of the blockwise version of this conjecture, which remains unreduced at the present moment. Namely, we characterise finite groups having a cyclic Sylow p -subgroup in terms of the action of a specific element of $\text{Gal}(\mathbb{Q}^{ab}/\mathbb{Q})$ on the characters of degree coprime to p of the principal block of G when $p < 5$. We further prove that the analog statement for general defect groups follows the blockwise version of the Galois–McKay conjecture.

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