Donovan's conjecture, blocks with abelian defect groups and discrete valuation rings. (English) Zbl 07203115

Summary: We give a reduction to quasisimple groups for Donovan's conjecture for blocks with abelian defect groups defined with respect to a suitable discrete valuation ring $\mathcal{O}$. Consequences are that Donovan's conjecture holds for $\mathcal{O}$-blocks with abelian defect groups for the prime two, and that, using recent work of Farrell and Kessar, for arbitrary primes Donovan's conjecture for $\mathcal{O}$-blocks with abelian defect groups reduces to bounding the Cartan invariants of blocks of quasisimple groups in terms of the defect. A result of independent interest is that in general (i.e. for arbitrary defect groups) Donovan's conjecture for $\mathcal{O}$-blocks is a consequence of conjectures predicting bounds on the $\mathcal{O}$-Frobenius number and on the Cartan invariants, as was proved by Kessar for blocks defined over an algebraically closed field.

MSC:
20-XX Group theory and generalizations
20Dxx Abstract finite groups

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References:

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