

Abstract

Restrictions on parameters of partial difference sets in nonabelian groups

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A partial difference set S in a finite group G satisfying $1 \notin S$ and $S = S^{-1}$ corresponds to an undirected strongly regular Cayley graph $\text{Cay}(G, S)$. While the case when G is abelian has been thoroughly studied, there are comparatively few results when G is nonabelian. We provide restrictions on the parameters of a partial difference set that apply to both abelian and nonabelian groups and are especially effective in groups with a nontrivial center. In particular, these results apply to p -groups, and we are able to rule out the existence of partial difference sets in many instances. This is joint work with Gabrielle Tauscheck.