On extremal product-one free sequences over non-abelian groups and weighted Davenport constants

Sávio Ribas[1], F.E. Brochero Martínez[2]

[1] Universidade Federal de Ouro Preto

[2] Universidade Federal de Minas Gerais

Let G be a multiplicative finite group. The *small Davenport constant* of G is the smallest $\mathsf{d}(G) \in \mathbb{Z}_+^*$ such that every sequence over G with $\mathsf{d}(G)$ elements has a non-empty subsequence whose product, in some order, is 1. If G is abelian and $A \subset \mathbb{Z}$, the *A-weighted Davenport constant* of G is the smallest $\mathsf{D}_A(G) \in \mathbb{Z}_+^*$ such that every sequence $(x_1, \ldots, x_{\mathsf{D}_A(G)})$ over G has a non-empty subsequence $(x_{j_i})_i$ such that $\prod_{i=1}^{t} x_{j_i}^{\varepsilon_i} = 1$ for some $\varepsilon_i \in A$. Bass [1] and Zhuang & Gao [5] found $\mathsf{d}(G)$ for some types of (non-abelian) metacyclic groups G. For these groups, the authors [2, 3, 4] characterized explicitly the sequences of length $\mathsf{d}(G)-1$ which are free of product-1 subsequences. During the talk, we will present the main ideas for these characterizations and the relations with some weighted problems.

References

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