

Abstract

Binary self-dual extremal codes

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Binary self-dual $[n, k, d]$ -codes are called extremal if $d = 4 \lfloor \frac{n}{24} \rfloor + 4$. Extremal codes are for several reasons of particular interest. However such codes have been constructed only for small lengths. In order to find larger examples non-trivial automorphisms may be helpful. We were able to obtain some restrictions on possible automorphisms of extremal codes. This result leads to an interesting conjecture.

If the weights of all codewords are divisible by 4 an extremal code is said to be of Type II. Due to Gleason such codes occur only at lengths a multiple of 8 and have unique weight enumerators. We give a complete classification of all extremal extended quadratic residue and quadratic double circulant codes of Type II.

The results are joint work with Stefka Bouyuklieva (Veliko Tarnovo) and Wolfgang Willems (Magdeburg).