

Small weight codewords in the code of points and hyperplanes of $\text{PG}(n, p)$, p prime

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(joint work with Sam Adriaensen and Lins Denaux)

Recently, T. Szőnyi and Zs. Weiner investigated small weight codewords in the code of points and lines of $\text{PG}(2, q)$, q a prime power.

For $q = p$ prime, they characterized all codewords of weight smaller than $3p - 3$ as being a multiple of a line or a linear combination of two lines. This was also recently proven by B. Bagchi.

We have used this result to investigate small weight codewords in the code of points and hyperplanes of $\text{PG}(n, p)$, p prime.

This led to the characterization of the codewords of weight at most (roughly) $5p^{n-1}/2$. The characterization result shows that such a codeword is either a multiple of a hyperplane or a linear combination of two hyperplanes.