A BOUND FOR THE MAXIMUM WEIGHT OF A LINEAR CODE

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Abstract. It is shown that the parameters of a linear code over $\mathbb{F}_q$ of length $n$, dimension $k$, minimum weight $d$ and maximum weight $m$ satisfy a certain congruence relation.

In the case that $q = p$ is a prime, this leads to the bound $m \leq (n - d)p - e(p - 1)$, where $e \in \{0, 1, \ldots, k - 2\}$ is maximal with the property that

$$\binom{n - d}{e} \not\equiv 0 \pmod{p^{k-1-e}}.$$ 

Thus, if $C$ contains a codeword a length $n$ then $n \geq d/(p - 1) + d + e$.

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