CONTRUCTION OF SELF-ORTHOGONAL FLAGS OF CODES

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A flag $C_0 \subsetneq C_1 \cdots \subsetneq C_s \subsetneq \mathbb{F}_q^n$ of linear codes is said to be self-orthogonal if the duals of the codes in the flag satisfy $C_i^\perp = C_{s-i}$, and it is said to be self-isometry-dual with respect to an isometry vector $\mathbf{x}$ if $C_i^\perp = \mathbf{x}C_{s-i}$ for $i = 1, \ldots, s$. We characterize complete (i.e. $s = n$) self-isometry-dual flags by means of the existence of a word with non-zero coordinates in a certain linear subspace of $\mathbb{F}_q^n$. For flags of algebraic geometry codes we prove a so-called translation property of isometry-dual flags and give a construction of complete self-orthogonal flags, providing examples of self-orthogonal flags over some maximal function fields. For one-point codes, all these results have a translation to numerical-semigroups which will be explained.

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