

# Description of Data, Related to the Paper "Linear Codes and Self-Polarity"

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## Abstract

In this work, projective self-dual (PSD) and self-polar linear codes over finite fields with  $q$  elements, where  $q$  is a power of a prime, are studied. The possible parameters for which PSD codes may exist are presented, and many examples for such codes are given. Algorithms for checking whether a  $q$ -ary linear code is self-polar are described. Many PSD and self-polar codes over fields with 2, 3, 4 and 5 elements with two and three nonzero weights are constructed.

## 1 Tables and files

There is a separate directory for every type of the studied codes, named according to the number of weights (2W or 3W) and the characteristic of the field - binary, ternary, quaternary and GF5. Files, containing the generator matrices of all constructed codes, are named  $n\_k\_d.q$ , where  $n, k$  and  $d$  are the parameters of the codes - length, dimension and minimum distance, respectively. The file type  $q$  means the characteristic of the field. Each file contains the generator matrices of all inequivalent codes with the corresponding parameters. New generator matrix starts after a row of the type  $?k\ n\ q$ . Afterwards we give the matrix itself. It is followed by the weight enumerator of the code.

In every directory there is a sub directory, containing ".psd" files, also named by length, dimension and minimum distance of the corresponding codes. Each file contains generator matrices of PSD and self-polar codes. Each matrix is separated as before. If a code is PSD, then its matrix is followed by the word "SELFDUAL". If the codes is self-polar, we give the special generator matrix  $G$ , for which the code and its dual have one and the same characteristic vector. Further, the matrix  $G^T.G$  is given.