On linear codes from incidence geometries

Michel Lavrauw
Sabancı University

The characterisation of minimum weight codewords in linear codes is a classical problem within coding theory. Of special interest are the codes generated by the incidence matrix of points and blocks of certain incidence structures. The codes generated by the incidence matrix of points and subspaces of affine and projective spaces are well understood since the 1970’s through their relation with the Reed-Muller codes.

For partial geometries, the duals of these codes have attracted attention because of their properties when seen as an LDPC code, and the minimum weight has been determined in several cases [1, 2, 3]. However, when the partial geometry is not fully embedded in an affine or projective space, far less is known.

In this talk we will report on recent work with Geertui Van de Voorde in which we solve this problem for translation generalised quadrangles, thus extending the known results for classical generalised quadrangles from [4].

References


