Abstract

In this talk, we construct three new infinite families of (n, d_P)_q MDS symbol-pair codes using simple-root cyclic codes. Specifically, the first two constructions are based on analyzing the solutions of certain equations over finite fields. The third construction arises from the decomposition of cyclic codes, where we utilize the orthogonal relationships between component codes and their duals to rigorously exclude the presence of specific codewords. It is worth noting that for the pair distance d_P=7 or 8, our q-ary MDS symbol-pair codes achieve the longest known code length when q is not a prime. Furthermore, for d_P=9, our codes attain the longest code length regardless of whether q is prime or not.