Discrete Mathematics Seminar

Illinois State University

2:00–2:50 pm, January 28

Speaker: Papa Sissokho, Illinois State University

Mixed MDS Codes

Let $\mathbb{F}_q^m$ denote the vector space of dimension m over the Galois field $\mathbb{F}_q$. A *k-independent set of subspaces* (k-ISS) of $\mathbb{F}_q^m$ is a set $\mathcal{S}$ of subspaces in $\mathbb{F}_q^m$ such that $|\mathcal{S}| \geq k$ and any subset of k subspaces of $\mathcal{S}$ is independent.

In a previous DiscMath talk, we have seen that a k-ISS can be used to construct a mixed code $\mathcal{C}$ with minimum Hamming distance at least $k+1$ and covering radius of $\mathcal{C}$ is at most $k-1$.

In this talk, we will discuss the conditions under which $\mathcal{C}$ has the maximum possible cardinality among all mixed codes with the same parameters (length and minimum distance), i.e., when $\mathcal{C}$ is *Maximum Distance Separable (MDS)*.