Heide Gluesing-Luerssen and Hunter Lehmann* (hunter.lehmann@uky.edu). Distance Distributions of Cyclic Orbit Codes.

Subspace codes are collections of subspaces of the finite vector space $\mathbb{F}_q^n$ under the subspace metric. The distance distribution of such a code is the vector whose $i^{th}$ entry counts the number of pairs of codewords with subspace distance $i$. Constant dimension cyclic orbit codes, which are contained in a Grassmannian $G_q(n,k)$ and are the orbit of a subspace under an action of $\mathbb{F}_q^*$ on $G_q(n,k)$, are of particular interest. We show that for optimal such codes, the distance distribution depends only on $q, n$, and $k$. For more general codes, we can relate the distance distribution to the number of orbits which contain intersections between different codewords. (Received September 13, 2019)