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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 $\mathbb{F}_{q^n}^*$ 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)