

Constant Dimension Codes via Generalized Coset Construction

Authors : Kanchan Singh, Sheo Kumar Singh

Abstract : The fundamental problem of subspace coding is to explore the maximum possible cardinality $A_q(n, d, k)$ of a set of k -dimensional subspaces of an n -dimensional vector space over F_q such that the subspace distance satisfies $d_s(W_1, W_2) \geq d$ for any two distinct subspaces W_1, W_2 in this set. In this paper, we construct a new class of constant dimension codes (CDCs) by generalizing the coset construction and combining it with CDCs derived from parallel linkage construction and coset construction with an aim to improve the new lower bounds of $A_q(n, d, k)$. We found a remarkable improvement in some of the lower bounds of $A_q(n, d, k)$.

Keywords : constant dimension codes, rank metric codes, coset construction, parallel linkage construction

Conference Title : ICM 2024 : International Conference on Mathematics

Conference Location : Goa, India

Conference Dates : December 09-10, 2024