FUZZY RD CODES WITH RANK METRIC AND DISTANCE PROPERTIES

W.B.Vasantha Kandasamy and R. S. Selvaraj

In this paper we introduce a new notion called fuzzy RD-codes and it is defined as a fuzzy subset of n-tuples over a Galois field GF (2^N) where n ≤ N, N > 1. Let V^n denote the n-dimensional vector space of n-tupels over GF (2^N) = F^n, n ≤ N, N > 1. Let u, v ∈ V^n where u = (υ_1, υ_2,..., υ_n) and v = (ν_1, ν_2,..., ν_n) υ_i, ν_i ∈ GF (2^N). A fuzzy RD code word fµ is a subset of V^n defined by fµ = {(υ, fµ(υ) | υ ∈ V^n} where f_n (υ) is the membership function. We study these fuzzy RD codes and show that in case of asymmetric, unidirectional and symmetric error models, fuzzy RD codes behave differently from fuzzy codes built using Hamming metric. Further fuzzy RD-code words are not invariant to the dimension of the code space in terms of distance.