ON CIRCULANT RANK DISTANCE CODES

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In many communication systems we often encounter with channels having very high error probability. Codes with very high error correcting capability should be used in such systems. In this paper we introduce a new class of codes called circulant codes with rank metric. We define a circulant rank code of length $N$ as a subspace of $V^N$ equipped with the above-defined distance. To characterize circulant rank codes we introduce the notion of divisor degree sequence. Further we define cyclic circulant rank codes and discuss its existence through the divisor degree sequence. A circulant rank code of length $N$ is called cyclic if, whenever $(X_1, X_2, \ldots, X_n)$ is a codeword then it implies $(X_2,\ldots, X_n, X_1)$ is also a codeword.