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CIRCULANT RANK CODES IN COMMUNICATION CHANNELS

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In this paper we define a new type of codes on the space of circulant matrices over GF(2). Consider the Galois field $GF(2^N)$ where $N > 1$. An element $\alpha \in GF(2^N)$ is denoted by N-tuple $(\alpha_0, \alpha_1, \ldots, \alpha_{N-1})$. A toll called circulant transpose T_C of $\alpha = (\alpha_0, \alpha_1, \ldots, \alpha_{N-1})$is defined and we associate with each $\alpha \in GF(2^N)$ a circulant matrix whose ith column is α_I^{Tc} for i = 0 to N-1. We define a circulant rank code of length N and this N is associated with a N-sequence over GF(2) which we call as divisor degree sequence, using this we obtain many interesting properties about circulant rank codes. This code has the capacity to correct unpredictable error patterns in communication channels.

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