

EFFECTIVE ERASURE CODES FOR RELIABLE COMPUTER COMMUNICATION PROTOCOLS USING CODES OVER ARBITRARY INTEGER RINGS

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Computer communications generally require reliable data transfers among the communicating parties. Luigi Rizzo (1997) has constructed effective erasure codes for reliable computer communication protocols. His codes were based on Vandermonde matrices computed over $GF(p^r)$. In this paper we construct a class of effective erasure codes for reliable computer communication protocols using codes over arbitrary integer rings. This is a new class of codes which we name as maximum integer Rank distance codes which are rank distance codes constructed over the ring of integers modulo Z_n ; where $n = 2m$ and $m = p_1 p_2 \dots p_t$ where p_i 's are distinct primes. The choice of $n = 2m$ is done to avoid ambiguity and to get a reliable result. The codes use forward error correction techniques and is suited to a number of different applications. We give the definition of Maximum Integer Rank Distance codes (MIRD codes). For these codes a coding and decoding algorithms are given.

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