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The probability of correcting errors by an antinoise coding method when the number of errors belongs to a random set

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Abstract

We consider n messages of N blocks each, where each block is encoded by some antinoise coding method. The method can correct no more than one error. We assume that the number of errors in the ith message belongs to some finite random subset of nonnegative integer numbers. Let A stand for the event that all errors are corrected; we study the probability P(A) and calculate it in terms of conditional probabilities. We prove that under certain moment conditions probabilities P(A) converge almost sure as n and N tend to infinity so that the value n/N has a finite limit. We calculate this limit explicitly. © 2010 Allerton Press, Inc.

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Keywords

convergence almost sure, generalized allocation scheme, Hamming code