Probabilistic models in quasigroup error-detecting codes

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Abstract

In my future work I plain to investigate error-detecting codes and probabilistic models in them. Error-detecting codes are used to detect errors when messages are transmitted through a noisy communication channel. We propose error-detecting codes using quasigroup operation $*$ on set $A = \{0, 1, 2, 3\}$. In order to detect errors, we extend an input message $a_1 a_2 \dots a_n$ to block $a_1 a_2 \dots a_n d_1 d_2 \dots d_n$, where $d_i = a_i * a_{(i+1) \ mod \ n}$, $i = 1, 2, \dots, n$. We calculate an approximate formula which gives the probability that there will be errors which will not be detected.

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