Fast algorithm of enumerative encoding for main problems of information theory

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We propose the algorithm of fast enumeration for main problems of coding theory. These problems are: 1) encoding of binary words with given number of ones and its special case when number of ones equals number of zeroes; 2) encoding of run-length-constrained words. This problem is of interest to magnetic recording and some other fields; 3) encoding of the Grassmannian space elements and encoding of the Dyck language words. We apply the modification of method of fast enumeration of combinatorial objects proposed by B. Ryabko to stated problems. Our algorithm has less computational complexity than other known algorithms do.

Keywords: *encoding, enumerative encoding, information theory.*