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The dissertation discusses the analysis and research of a new method for fast decoding of long pseudo-random codes, which provides high reliability of information exchange under the influence of external noise. Three methods were investigated to find an error-free segment of a linear iterative sequence that allows pseudo-random codes to be decoded by a segment of lengths rather than length of code. For simplex (n, k) codes with parameters (2^{13} - 1.13), optimal parameters for the length of the solution segment for decoding during transmission over a binary symmetric channel are found.

The noise immunity of the tested decoding method was studied. The computational complexity of the implementation of the developed method is estimated. The software packages MatLab, Simulink and MS Excel are used for modeling and calculations.