Coordinate method of synchronization and recognition of binary compound code sequences

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Pseudonoise signals are widely used in various communication systems and control systems. The development of processing devices of input signals of such systems, able to solve tasks of synchronization and recognition of received code sequences simultaneously, is of current importance. A possibility of using the coordinate method for synchronization and recognition of M-sequences, as well as composite code sequences, built on their basis, is presented in this article, based on the structural features of complex code sequences and using the basic provisions of the Galois fields theory. The possibility of using the coordinate method being proposed is considered by the example of code sequences of small Kasami family. The solution of this problem is possible provided that compound code sequence was decomposed into component M-sequences. The use of accompanying matrixes of polynomials, generating component M-sequences, made it possible to calculate the coordinates of current symbols of the components. The problem is solved after defining the vector-column of coordinates of follow-related consecutive symbols and establishment of their orderliness in accordance with a certain criteria of correct synchronization and recognition. The diagrams present the results of computing of the required probability characteristics.

Keywords: *the coordinate method, pseudonoise signals, Galois fields, field element, an accompanying matrix, vector of coordinates, majoritarian element, parity-check equations.*

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