Further Remarks for the Matrix Type-B Codes

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Different philosophies lie behind the detecting and correcting error patterns in a real communication channel. The sceptic points in choosing an efficient code, specifically the matrix type-B code, were pointed out in Refs. 1 and 2.

Some more points are shown here. As a result the matrix type-B code is found to be a "best choice". Some more theoretical aspects for this code are also given. These are useful for the realization and testing of an encoding-decoding algorithm with IC's used in a unique way for its implementation.

KEY WORDS: Matrix type-B code; mitroid; optimum bribing; asymptotic behavior; and implementation procedure method.

1. INTRODUCTION

As it is known from our previous research,\(^{(1,2)}\) matrix codes have a great advantage among other codes used for error control in a real communication channel. This is why they are described as a "best choice" codes.

In general the idea behind a matrix code can be tested in two ways. By building up equipment, in other words, by hardware and/or by producing a software package. The problem considered here is to find a decoding algorithm for a special case of the matrix type-B code and implement it by means of hardware (with logical IC's) in a real communication channel. In addition, the encoding-decoding (codec) apparatus is of main importance to both sender and receiver.

The investigation reported in the present paper is a continuation on the fundamental matrix type-B codes.\(^{(3)}\)

The error patterns for correction to be considered are discussed briefly in Section 2. Some theoretical aspects necessary for the discussion of the
decoding algorithm of Section 4 are given in Section 3. Then the implementation structure with IC’s of the encoder-decoder is described in Section 5. In Sections 6 and 7, results are stated concerning the theoretical and the technical contents presented on all the previous sections. The work leading to these results was done independently by the author and some of this research (as i.e. the decoder, Theorem 4, comparisons between other burst correcting codes, et. al.) is new. Therefore, we can point out in view of these that the paper contributes much to the existing knowledge of the technical and theoretical matters of the matrix codes.

The best known methods of structuring elementary matrix and concatenated matrix codes, such as matrix type-B, matrix type-C, powerful