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BOUNDS FOR CODES DETECTING REPEATED BURSTS IN UNEQUAL BLOCKS

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Abstract : In the present age, huge dependence on technology makes the transmission and reception of data of utmost importance. During this process, errors get incorporated and error control techniques are required to identify or correct these errors. For that, redundancy is added to the transmitted vector. For an efficient system, the redundancy should be as low as possible. In this paper, we obtain bounds on the redundant digits of a binary linear code that detects 2-repeated bursts of different lengths in two blocks of unequal lengths. An illustration of such a code is also given.

Keywords: Error, Syndrome, Repeated burst, Error detection, Parity-check.

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1. Introduction. In this era of the digital world, data is stored and transmitted extensively. All the time, transmission and reception of data is a major concern for data scientists. While transferring data through noisy channels, errors get introduced. These errors need to be detected or corrected. Such errors may be in random single digits or may be clustered. Researchers have been putting great efforts to develop methods to handle errors. Many codes have been developed to deal with different types of errors (Abramson, 1959, Bose and Ray-Chaudhuri, 1960 and Reed and Solomon, 1960). Hamming (Hamming, 1950), developed codes for single error correction. Initially, Fire (Fire, 1959), referred to clustered errors as open loop bursts to give a more general concept. An open loop burst of length b is a vector in which non-zero components occur as b consecutive digits, the first and the last digit being non-zero. Burst errors may appear in different forms: CT-burst (Chien and Tang, 1965), b(fixed) burst (Dass, 1980), repeated b(fixed) burst (Dass and Garg, 2009).

Berardi, Dass and Verma, (2009) introduced the concept of repeated bursts of length b or less. An m-repeated burst of length b is a vector in which non-zero components

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