MAXIMUM RANK DISTANCE CONVOLUTIONAL CODES

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ABSTRACT. Rank metric codes are used to transmit data over a network. In particular, when several uses of the network are needed to transmit the data, multi-shot network codes are better suited to deal with errors or erasures introduced during transmission. A very natural way of building multi-shot codes is to use rank metric convolutional codes (see [1, 2, 3, 4] for different approaches). In [5] a more general theoretical framework to rank metric convolutional codes was presented. Later, in [6] the authors defined an important class of rank metric convolutional codes, the Maximum Rank Distance (MRD) convolutional codes, which are optimal for error and erasure correction. In the same paper, the authors presented constructions of such codes for a very particular set of parameters.

In this talk, we will introduce the (general) rank metric convolutional codes and the MRD convolutional codes defined in [5, 6]. We will also present novel and more algebraic constructions of MRD convolutional codes. These constructions are a nontrivial extension of the ones defined in [6] expanding the set of known MRD convolutional codes.

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