

A NON-BINARY TURBO TRELLIS CODE MODULATION-BASED 3-D MAP ALGORITHM

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ABSTRACT

This paper presents a non-binary Turbo Trellis Coded Modulation (TTCM) decoder-based multidimensional 3-D (Maximum A Posteriori) MAP algorithm.

The proposed system deals with Non-binary error control coding of the TTCM scheme for transmissions over the AWGN channel. The idea of Non-binary codes has been extended for symbols defined over rings of integers, which outperform binary codes with only a small increase in decoding complexity.

The basic mathematical concepts necessary for working with Non-binary error-correcting codes are Groups, Rings and Fields. The simulation results show that the performance of the non-binary TTCM decoding algorithm outperforms the binary decoding methods.

KEYWORDS: Turbo Codes, TTCM, Non-Binary Error Correcting Codes, Groups, Rings of Integers, MAP Algorithm