Abstract

Forward error correction codes (FEC) are used for error detection and correction in communication systems. Low density parity check code (LDPC) is used as a powerful Forward Error Correction code in long distance communication systems which works close to the Shannon limit. Unlike other conventional channel code, the decoding algorithm used for LDPC codes is an iterative message passing algorithm (MPA). They are soft decision and hard decision decoding algorithms. This paper aims at a comparative study between a hard decision algorithm (bit flipping) and a soft decision algorithm (belief propagation). The analysis is based on the Bit Error Rate of decoding outputs. The result shows that the Soft decision decoding
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gives better performance than the hard decision decoding. LDPC code with soft decision decoding enhances the system performance and makes the long distance communication fast and error free.

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Index Terms

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Ldpc  Fec  Lbc  Iterative Decoding  Ber  Sum Product Decoding  Message Passing Algorithm.