ABSTRACT

In This research LDPC coding found by Robert Gallager in 1962 is applied to MIMO-OFDM system.

LDPC performance has been simulated with Matlab 7.1 software and its simulated performance in MIMO-OFDM system is described. LDPC model is validated on AWGN channel and Rayleigh channel to find uncoded coding gain of model system by varying signal constellation, sparseness of its matrix, code rate, code length and decoding iteration. The Influence of LDPC on OFDM system and MIMO-OFDM System in terms of coding gain is described. In this work the IEEE 802.11a standard is utilized.

In LDPC-OFDM using ½ code rate, coding gain of 16.8 dB is obtained for 10^{-3} BER in AWGN channel. In LDPC MIMO-OFDM using spatial multiplexing 2x2 detection and ZF-VBLAST technique using the same parameter coding gain of 4.5 dB is obtained for 10^{-4} BER in Rayleigh channel. Compared to convolutional code, an improvement of 3.25 dB is observed for 10^{-4} BER in Rayleigh channel.