

Bit Error Rate Performance of MIMO Systems for Wireless Communications

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Abstract : This paper evaluates the bit error rate (BER) performance of MIMO systems for wireless communication. MIMO uses multiple transmitting antennas, multiple receiving antennas and the space-time block codes to provide diversity. MIMO transmits signal encoded by space-time block (STBC) encoder through different transmitting antennas. These signals arrive at the receiver at slightly different times. Spatially separated multiple receiving antennas are employed to provide diversity reception to combat the effect of fading in the channel. This paper presents a detailed study of diversity coding for MIMO systems. STBC techniques are implemented and simulation results in terms of the BER performance with varying number of MIMO transmitting and receiving antennas are presented. Our results show how increasing the number of both transmit and receive antenna improves system performance and reduces the bit error rate.

Keywords : MIMO systems, diversity, BER, MRRC, SIMO, MISO, STBC, alamouti, SNR

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