Abstract

To overcome a multipath fading environment with low complexity and to achieve wireless broadband multimedia communication systems, orthogonal frequency division multiplexing (OFDM) transmission scheme is used. OFDM is one of the applications of a parallel data transmission scheme, which reduces the influence of multipath fading. The performance of OFDM can be improved further using concept of spatial diversity Multiple Input Multiple Output (MIMO). Similarly, Adaptive Beamforming algorithms improve the SNR by focusing antenna patterns on desired angles of reception or transmission, which actually increases the antenna gain. This paper explains the BER performance of MIMO-OFDM system with and without using adaptive beamforming algorithms and both using V-BLAST as the detection scheme. Different modulations are used in Rayleigh fading environment to observe the BER performance by simulations. Furthermore, paper study also shows that RLS beamforming algorithm shows the better performance and is explain by simulations that include array factor plot as well as mean square error plot.
Adaptive RLS Beamforming for MIMO-OFDM using VBLAST

References


Index Terms

Computer Science Communications

Keywords
Beamforming, MIMO-OFDM, Least Mean Square (LMS), Recursive Least Square (RLS), V-BLAST Zero Forcing, Minimum Mean Square Error (MMSE), Rayleigh, 16-QAM, QPSK