

REVIEW OF CHANNEL ESTIMATION TECHNIQUES FOR OFDM SYSTEM

JYOTI

Assistant Professor, P.D.M College of Engineering, Bahadurgarh(Haryana), india.

Abstract

Multiple transmit-and-receive antennas can be used in orthogonal frequency division multiplexing (OFDM) systems to improve communication quality and capacity. In this paper, we studied two techniques to improve the performance and reduce the complexity of channel parameter estimation: optimum training-sequence design and simplified channel estimation. The optimal training sequences not only simplify the initial channel estimation, but also attain the best estimation performance. The simplified channel estimation significantly reduces the complexity of the channel estimation at the expense of negligible performance degradation. The effectiveness of the new techniques is demonstrated through the simulation of an OFDM system with two-transmit and two-receive antennas. The space-time coding with 240 information bits per codeword is used for transmit diversity. In Section by the simulation, the required signal-to-noise ratio is only about 9 dB for a 10% word error rate for a channel with the typical urban- or hilly-terrain delay profile and a 40-Hz Doppler frequency. In section II we also studied the pilot based channel estimation techniques for OFDM communication over frequency selective fading channels. Mainly three prediction algorithms are used in the equalizer to estimate the channel responses namely, Least Mean Square (LMS), Normalized LMS (NLMS) and Recursive Least Square (RLS) algorithm. These three algorithms are considered in this work and their performances are statistically compared by using computer simulations.

Keyword: MIMO systems, OFDM, parameter estimation, transmit diversity, Wireless-communications, Channel estimation, Evolutionary spectrum, Space time coding, Rayleigh fading.