PERFORMANCE OF MULTIPLE SPACE TIME CODED
MIMO-OFDM BY USING EQUALIZER METHOD

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ABSTRACT

This project highlights the simulation by using Space Time Block Code to identify the effect of two type of noise which is Additive White Gaussian Noise and Multipath Rician Fading to a communication system. The main objective is to compare the performance of Bit Error Rate (BER) at the communication channel with Additive White Gaussian Noise or Multipath Rician Fading. Space Time Block Code scheme combines the channel code design with modulation and diversity at the transmitter to improve the data rates and reliability of communication. This technology is primarily concerned with three-dimensional (3-D) signal design for multi-transmit antenna wireless systems. Beside that the design of STBC is to achieve full spatial diversity over fading channels. Matlab Version 2006a is used to simulate the system. The model consists of transmitter, transmission channel and receiver. The adaptive equalizer method is used at the receiver to equalize the output signal. The system also provides error detection and correction using Forward Error Correction (FEC).

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CHAPTER 1

INTRODUCTION

1.1   Overview

Wireless communication user continuously demand for better reliability and higher throughput of the system [15]. At the same time, the wireless channel's inherent complexity such as time varying nature of the channel and multipath create a communication system with greater challenge when compare to tradition wired communication system

This project describes a simulator for digital communication systems. Two kinds of digital communication systems: transmission with Additive White Gaussian Noise and transmission Multipath Rician Fading. Digital communication system offer many advantages as compared to analog system. It have higher performance, greater versatility, higher security and economical.

Multi-input and multi-output (MIMO) multiple antenna system gives more reliability or higher spectral efficiency to a communication system [4]. Channel coding combined with space-time coding and coding gain for reliability gives transmit diversity. High spectral efficiency is achieved by creating multiple space dimensional channels. Space-Time Block Codes (STBC) from complex orthogonal designs (COD) is an interest as they can be used for Gaussian Minimum Shift Keying (GMSK) to achieve higher data rates in wireless communication systems.

Matlab is one of the high performance programming languages. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in a familiar mathematical notation. By using MATLAB Version R2006a, a complete communication model applying Gaussian Minimum Shift Keying modulation technique and Space Time Block

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