

# Improvement of Image Transmission over WiMax Using Nakagami Channel

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**Abstract** - WiMAX Stands for worldwide interoperability for microwave access formed by WiMAX forum in 2001. In this project, the mobile WIMEX standard has been simulated on a test bench developed for evaluating the performance in term of errors at different SNR. The real data of an image has been used to simulate the system and faster improvement has been achieved with fuzzy filter. The improvement has been identified by evaluation of parameter like RMSE, PSNR etc. The effect of modulation has been identified a BER, PSNR & RMSE parameter into different SNR value. The relay fading channel with multiple antenna system is used to evaluate the performance. The results of different of antenna configurations have been depicted in the report. The significant important in db at low SNR value has been recorded in PSNR with fuzzy filter. Every receiving antenna is Gaussian filter advantage of ~2-5 db

**Keywords** - WIMAX, OFDM, MIMO etc.

## I. INTRODUCTION

In modern world wireless communication technique are involved in every part of life. WiMAX system is the upcoming wireless which uses IEEE standard 802.16. By using Worldwide Interoperability for Microwave Access (WiMAX) technology we can overcome the limitations of the existing wireless like short coverage area, lack of security and low data rate. In our thesis, initially we analyzed the basic concept of Worldwide Interoperability for Microwave Access. Mobile WiMAX is a version based on the IEEE 802.16e amendment (IEEE 802.16-2005), optimized for dynamic mobile radio communication channels and able to provide support for handoffs and roaming. The new mobile air interfaces specified in the IEEE 802.16e has successfully addressed the requirements for higher data rates and efficient spectral efficiencies in provisioning full-fledged mobile broadband access scheme. An IEEE 802.16e-based Base Station (BS) can support both fixed and mobile broadband wireless access. In similar to the different cellular and broadband technologies, global mobility related research in Worldwide Interoperability for Microwave Access is mostly focused on two main areas of concern: location management and handover management, this two feature is not present in old standard of IEEE 802.16d, Which we will describe in this thesis

## II. PROBLEM REVIEW AND PROPOSED SCHEME

Many of the simulation have been carried out by random data. In this project the real data has been taken. The image recovery for a noise introduce by wireless transmission is taken as a fuzzy problem due to the random effort of channel. The paper presented earlier has taken the one or two modulation techniques for analysis. Hence a wide range of modulation has simulated. The image transmission on schedule channel is not presented earlier with mobile WiMAX system which simulated here. Effect of MIMO is analyzed mobility at BER performance. Their frequency extended for PSNR & RMSE also.

## III. SIMULATION RESULT

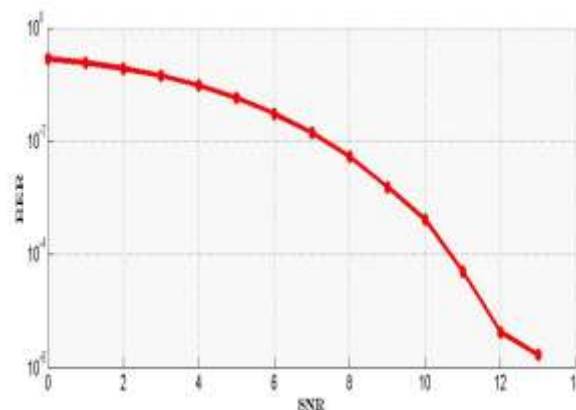


Fig. 1. MIMO WiMAX Without Fuzzy Nakagami BER Vs SNR

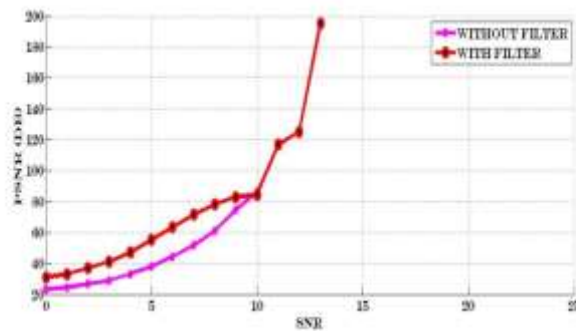


Fig. 2. MIMO WiMAX without Fuzzy Nakagami PSNR Vs SNR

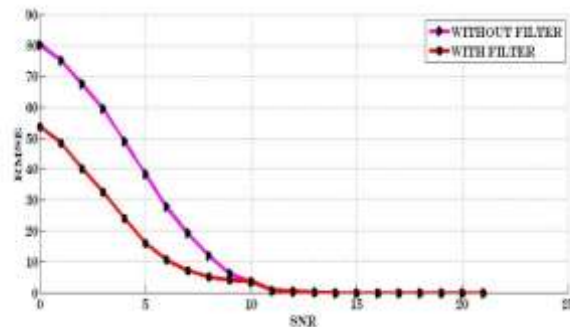


Fig. 3. MIMO WiMAX without Fuzzy Nakagami RMSE Vs SNR

#### IV. CONCLUSION

The paper represent here evaluate the performance in term of errors at different SNR using nakagami, roughly. From the simulation results it is very clear that the image recovery for a noise introduce by wireless transmission is taken as a fuzzy problem due to the random effort of channel. Effect of MIMO is analyzed mobility at BER performance. Their frequency extended for PSNR & RMSE also.

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