Journal of Engineering Sciences

Vol 11, Issue 7, July/2020
ISSN NO:0377-9254

A TWO-WAY RELAY TRANSMISSION IN CODED MIMO-OFDM USING DELAY DIVERSITY SCHEME

Joshi Sri Priya [1]*, PG Scholar Sunitha Tappari [2], Assistant Professor

[1] *Department of Wireless & Mobile Communication,*
[2] *Department of Electronics & Telematics Engineering,*
G. Narayanamma Institute of Technology & Science for Women, India
*Email: sripriya925@gmail.com

ABSTRACT:

In wireless communication, Two-way relays can enhance coverage, throughput, and reliability of wireless systems; it has attracted intense research interest in the past decades. Performance review shows that Full-Duplex relay system outperforms well than the traditional relay systems, due to its capability to double the spectral efficiency. The Self-interference (SI) releasing from the Full-Duplex (FD) node's transmission to its own reception has the detrimental effect on the performance of FD relay communication. Delay diversity (DD) MIMO-OFDM in amplify-and-forward (AF) two-way relay system is proposed, where one relay forwarding link, one direct source to destination link and residual self-interference (RSI) are taken. The required cyclic prefix (CP) length is evaluated and an appropriate Amplify and Forward (AF) relay protocol in the full-duplex relay MIMO-OFDM system is proposed. To provide spatial diversity, the direct source-to-destination link and the AF relay link can be combined. To convert the spatial diversity to channel frequency diversity that is further exploited by using the bit-interleaved coding by DD MIMO-OFDM scheme. The performance of Bit Error Rate (BER) for the proposed system is proved by simulation results.

1. INTRODUCTION:

Relay-assisted communication has been undergoing vast development in both industry and academia in recent years. The attractive benefit of relaying is the utilization of cooperative diversity to combat channel fading and boost communication reliability. By receiving, re-transmitting, and processing radio signals, low-cost solution energy efficiency is offered by relay networks to increase coverage of wireless connections. The Amplify and Forward (AF) protocol outperform the Delay and Forward (DF) equivalent in terms of shorter processing problems is the Self-Interference (SI) and less computational demand which results from the parallel transmission and reception at the same frequency. The strong SI looped back at the relay node from the transmitter can easily decreases the throughput of a full-duplex relay system. For SI suppression techniques, a substantial amount has been paid. The physical isolation of the relays transmits and receive antennas, the instance, or sufficiently large separation or space between transmit and receive antennas should be taken to partially remove the SI. Experiment reports show that by employing both interference and isolation cancellation techniques at least 110dB of SI can be suppressed. However, the SI can be minimized by suppression techniques, and residual self-interference still poses a problem in reality. Residual SI management is a necessary requirement in the designs of all full-duplex relay networks.

2. MOTIVATION:

The tremendous benefits a wireless technology brings along, most networks, local or otherwise, are not only adopting it but also evolving with it. The wireless technology offers, among others, lower cost, easier installation and mobility - a flexibility that no fixed network can offer. Consequently, it is expected that the reliability of data is uncertain due to error nature of wireless channels caused by fading and multipath. The goal for reliable data transmission is that received information is as close as possible to the transmitted data themselves. Hence, various techniques have been developed to deal with and help to improve the reliability of data over wireless channels. Among them, an interleaved MIMO-OFDM is considered to be an efficient and fairly simple technique that easily improves the reliability of a wireless full-duplex network. The benefits of relays are exploitation of the co-operative diversity to conflict channel fading to boost the communication performance by improving diversity of signal by relay communication with delay diversity where each relay introduces a certain time-delay to a signal before forwarding. And residual self-Interference (RSI) cancellation is done by loopback interference.

3. EXISTING SYSTEM:

A detailed study of the effect of phase noise from the oscillators on cancellation is presented in when independent oscillators are used in up-