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Interference Cancellation And Detection Using Precoders

Tech ID: 20867 / UC Case 2009-484-0

BRIEF DESCRIPTION

Interference in wireless communication systems is an ongoing problem. In the past, TDMA, FDMA, CDMA or other multiple access methods have been applied to avoid interference. The problem with these approaches is that they waste valuable bandwidth resources.

Researchers in UCI's Engineering and Computer Science Department have developed and tested a cancellation and detection system that achieves full diversity (no interference) with extremely low decoding complexity. The main idea behind this novel system is based on allowing (as opposed to attempting to avoid) interference and then use uniquely designed precoders that use the channel information to remove the interference, similar to destructive interference of EM waves.

FULL DESCRIPTION

The existing technologies used to avoid or reduce interference in wireless communication systems both lack effectiveness and consume valuable (expensive) bandwidth resources. The purpose of this UCI invention is to cancel the interference without using bandwidth, time, frequency, antenna or any other resources in the system.

The main idea is to use channel information to cancel the negative effects of interference from other users. With a goal of achieving full diversity and low decoding complexity, researchers at UCI have designed, tested and evaluated novel precoders and quasi-orthogonal designs to achieve such a system. This development is the first known method that achieves full diversity without sacrificing bandwidth with a linear complexity.

SUGGESTED USES

Next gen Wireless communication systems. Can be adopted for IEEE 802.11n, 802.20, 4G and WiMax standards.

ADVANTAGES

- » Full Diversity
- » Low Complexity

PATENT STATUS

Country	Туре	Number	Dated	Case
United States Of America	Issued Patent	8,411,785	04/02/2013	2009-484

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OTHER INFORMATION

CATEGORIZED AS

- » Communications
 - » Networking
 - >> Wireless
- » Computer
 - >> Hardware
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