



Channel Aware Space-Time Signaling for Wireless Communication over Wideband Multipath Channels

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WARF: P01040US

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method for managing the usage of a space-time channel.

Overview

Wireless communication has grown significantly over the past several years. To support multiple private two-way communications, the available spectrum is divided into a number of sub-channels that are allocated to users on a per request basis.

Several forms of interference can alter the signal. One type is referred to as inter-symbol interference, which results from the reception of the same signal at different times. This occurs due to signal propagation along different paths, which limits the rate at which data symbols can be transmitted. It has recently been recognized that accounting for inter-symbol interference can enhance signal transmissions.

The Invention

UW-Madison researchers have developed a method for reducing the computational resources required to enhance signal transmissions. Specifically, the method enables management of the usage of a space-time channel having a plurality of orthogonal sub-channels in a communication system. The system includes a transmitter, a receiver and one or more signal propagation paths between the transmitter and receiver.

Applications

- Management of wireless signal transmissions

Key Benefits

- Use of antenna arrays and wideband signaling increases the system's power and bandwidth efficiency.
- The space-time channel is used after coherent combining, which reduces the amount of resources required to obtain the orthogonal subchannels.
- Minimizes single user bit-error rates
- Accommodates as many simultaneous users as possible in the system
- Spatio-temporal dimensions can be managed efficiently for single users or multi-users or combinations of these.

Tech Fields

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