

Layered Space Time Processing Reduces Interference in a Multiple Antenna Wireless Communications System



INVENTORS • Akbar Sayeed, Ke Liu

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method of efficiently and reliably removing interference in multiple antenna array systems.

OVERVIEW

Currently, multiple antennas are used at both the transmitter and receiver in wireless communication systems. Wireless channel capacity is expanded by increasing the number of transmit antennas.

Due to the high-dimensional nature of multiple antenna array systems, methods for reducing interference have been developed to lower the computational complexity required for practical systems. Space-time processing is a key technology for removing interference, which allows full realization of wireless channel capacity. A promising space-time processing architecture, called BLAST, has recently been developed by Bell Laboratories; however, it requires a significant amount of processing power.

THE INVENTION

UW-Madison researchers have developed a system and method for performing space-time processing, which efficiently and reliably remove interference for multiple antenna array systems. This invention uses baseline algorithms that significantly simplify signal processing at the receiver compared to BLAST. Furthermore, the invention includes extended algorithms that can eliminate the bottleneck in BLAST performance caused by error propagation. The extended algorithms can be applied to existing systems employing BLAST-type processing, without altering their structure.

APPLICATIONS

- Wireless communications

KEY BENEFITS

THE WARF ADVANTAGE

Since its founding in 1925 as the patenting and licensing organization for the University of Wisconsin-Madison, WARF has been working with business and industry to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.



- Simple yet effective approach to achieve high data rates in multiple antenna wireless communication systems
- Applies to multiple antenna systems with any number of transmitters and receivers
- Unlike BLAST, this invention can be applied to situations where transmit antennas outnumber receive antennas
- Provides dramatic performance improvements over existing systems, including Bell Labs BLAST and V-BLAST
- Mitigates the effect of error propagation due to imperfect decision feedback in layered space-time structures
- More reliable wireless communication system, in part because it begins with a higher order diversity sub-channel
- Very efficient at removing interference

ADDITIONAL INFORMATION

Tech Fields

Information Technology - Telecommunications

CONTACT INFORMATION

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846.

