



TECHNOLOGY

A Data-Bearing Approach for Pilot-Embedding in Space-Time Coded MIMO Systems

OVERVIEW

Multiple-input multiple-output (MIMO) communication systems provide prominent benefits to wireless communication due to high capacity and reliability they can offer.

Researchers at the University of Maryland have designed an innovative pilot-embedding technique for space-time (ST) coded MIMO systems with affordable computational cost and better fast fading channel acquisition. This technology has potential applications in the design of the next generation broadband wireless communication systems.

Novel features include:

- " Pilot-embedding technique for channel estimation and data detection by exploiting the null-space property and the orthogonality property of the data-bearer and pilot matrices
- " Optimum power allocation scheme for data and pilot parts.
- " Three data-bearer and pilot structures, including time-multiplexing (TM)-based, ST-block-code (STBC)-based, and code multiplexing (CM)-based, are proposed.
- " Data-bearer and pilot structures are suitable for both the quasi-static and nonquasi-static flat Rayleigh fading channels. Also these could be generalized to multi-carrier systems.

This invention will significantly improve the channel estimation and probability of detection error performances for the practical wireless channels.

For more information, please contact the Office of Technology Commercialization, the University of Maryland, 301-405-3947 or by e-mail at otc@umd.edu

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Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

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CATEGORIES

- Microelectronics
- Information Technology

EXTERNAL RESOURCES

- [US Patent 7,848,443](#)

IS-2005-051