

Space-Time Codes for 802.16.3

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Discussion and development of 802.16.3 PHY

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Space-Time Codes for 802.16.3

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Context

- Last year A. R. Hammons, H. El Gamal submitted several technical proposals and presentations on Space-Time Coding (STC).
- These STCs, applicable to both OFDM and single carrier systems, meet complexity/benefit criteria for many or most applications.
- As the one or two PHYs progress, we would like to participate in the evaluation of the STCs as optional or evolutionary features.

STC Benefit - OFDM Example

- 4 Tx/Rx BTS antennas
- 2 Tx/Rx CPE antennas
- 6 MHz channel
- QPSK, not 256-QAM
- 20 Mbps downlink @ 13 dB with FER=1%
 - Approximately double the rate
 - C/N threshold consistent with tight reuse
 - bits/sec/Hz/cell - about 3X non-MIMO

Complexity Issues

- Moderate BTS complexity (4 Rx/Tx)
- Low CPE complexity (2 Rx/Tx)
- Would not be appropriate for a portable
- Reasonable for MMDS applications

Personal Note

- Many of us, as engineers, have spent considerable time dealing with the NLOS communications
- This is a chance to exploit the fading channel - not just mitigate it!!!