



图6 多天线单用户发送信号处理(信道2)

7 结论

本文提出了一种在TD-SCDMA基站采用发送信号处理的算法,研究了其复杂度和性能。仿真结果表明,单根发送天线进行发送信号处理时不一定能提高性能;多根天线进行发送信号处理时性能能大大提高;多跟天线进行发送信号处理时能有效实现空分多址,系统容量达到5倍以上的提高。

参考文献

- [1] LEE K, CHUN J. On the beamforming weight of the MIMO/SDMA system under channel uncertainty[C]//In 2004 IEEE 59th VTC 2004-Spring. Milan: IEEE Press, 2004: 775-778.
- [2] Yeh Ch, KWON D S. SDMA, multiuser diversity, and BF using array antenna in OFDMA system[C]//In 2007 IEEE 66th VTC-2007 Fall. Baltimore: IEEE Press, 2007: 671-675.
- [3] CHOI L U. Multi-user MISO and MIMO transmit signal processing for wireless communication[D]. Hongkong, China: Hong Kong University of Science & Technology, 2003.

- [4] 胡东伟, 陈杰. TD-SCDMA中基于块判决反馈的联合检测算法及其VLSI实现[J]. 电子与信息学报, 2008, 30(5): 1180-1184.
HU Dong-wei, CHEN Jie. Block decision feedback based joint detection algorithm for TD-SCDMA and its VLSI implementation[J]. Journal of Electronics & Information Technology, 2008, 30(5): 1180-1184.
- [5] ZHU Yu, LETAIEF K B. Frequency domain pre-equalization with precoding for broadband SDMA systems[C]//In WCNC 2007. Hongkong, China: IEEE press, 2007: 1449-1454.
- [6] RIM M. Multi-user downlink beamforming with multiple transmit and receive antennas[J]. Electronics Letters, 2002, 38(12): 1725-1726.
- [7] 张贤达. 矩阵分析与应用[M]. 北京: 清华大学出版社, 2004.
ZHANG Xian-da. Matrix analysis and its applications[M]. Beijing: Tsinghua Publishing House, 2004.
- [8] LAY D C. Linear algebra and its applications[M]. 2nd Ed. New York: Addison-Wesley, 2000.
- [9] 3rd Generation Partnership Project. 3GPP Tech Spec, TS 25.102/105/201/221/222/223/224/225/944[EB/OL]. [2005-06-21]. <http://www.3gpp.org>.
- [10] WANG Fan, GHOSH A, SANKARAN C, et al. WiMax system performance with multiple transmit and multiple receive antennas[C]//In 2007 IEEE 65th VTC-2007 Spring. Dublin: IEEE press, 2007: 2807-2811.
- [11] 景小荣, 周正中, 贺涛. 色噪声下MIMO信道估计优化及容量下限分析[J]. 电子科技大学学报, 2007, 36(2): 179-202.
JING Xiao-rong, ZHOU Zheng-zhong, HE Tao. Channel estimation optimization and lower bound of capacity analysis in MIMO system with colored noise[J]. Journal of University of Electronic Science and Technology of China, 2007, 36(2): 179-202.

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