

基于满速率空时编码的CDMA系统及多用户接收方案

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摘要 在给出满速率空时编码CDMA系统模型基础上, 针对现有空时编码CDMA系统过高的译码复杂度, 提出一种低复杂度的多用户接收方案. 方案中, 每个用户使用多用户检测方法获得各自的单用户接收信号形式, 非常有利于空时编码的复正交性应用, 最大比合并后译码计算仅为简单的线性合并, 有效降低了原方案的指数性译码复杂度. 在相同系统吞吐量下, 所给系统可采用低价调制方案, 并利用其相对多的空间冗余信息, 级联信道编码后明显增强了系统在衰落信道中传输可靠性. 仿真结果也表明所给系统比相应的满分集空时编码CDMA系统有着低的误比特率.

关键词 [满速率](#) [满分集](#) [空时编码](#) [多用户接收](#) [信道编码](#) [CDMA系统](#)

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Multiuser receiver scheme for the CDMA system based on full-rate space-time coding

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Abstract

A full-rate space-time coding based CDMA system model is firstly given. Considering that the existing space-time coded CDMA system has high decoding complexity, a low-complexity multiuser receiver scheme is proposed. In this scheme, each user employs the multiuser detection method to achieve the single user receiver signal form, which benefits the application of complex orthogonality of space-time coding. After maximum ratio combination, the decoding computation is only simple linear combination, and thus the exponential decoding complexity of the existing scheme is effectively decreased. On the condition of the same system throughput, the given system can adopt the low-order modulation scheme, and utilize more spatial redundant information. As a result, the concatenation of channel coding significantly strengthens the transmission reliability of the system in the fading channel. Simulation results also show that the system has a lower bit error rate than corresponding full-diversity space-time coded CDMA systems.

Key words [full-rate](#) [full diversity](#) [space-time coding](#) [multiuser receiver](#) [channel coding](#) [CDMA system](#)

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