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论文

频谱有效的差分空时编码CDMA系统

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摘要
该文针对码分多址(Code-Division Multiple-Access,CDMA)系统提出了频谱有效的差分空时传输方案。考虑包含M个同步共道用户的多用户环境,每一用户配备双发射天线。若接收端配备N≥2个接收天线,该方案将采用解相关检测器和接收天线分集分离M个用户。基于平坦Rayleigh衰落信道,给出了非相干译码器,它可为每一共道用户提供2×(N-1)的最小分集增益。与已有的差分空时编码CDMA系统相比,该方案具有两大优势:第一,仅需增加单个接收天线,该方案可在频谱效率提高1/3的条件下显著地改善系统性能;第二,译码仅具有线性复杂度。

关键词 空时码 差分调制 多用户干扰 干扰抑制

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Spectrum-Efficient Differential Space-Time Coded CDMA Systems

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Abstract
In this paper, a spectrum-efficient differential space-time transmission scheme is presented for Code-Division Multiple-Access (CDMA) systems. Consider a multiuser environment with M synchronous co-channel users, each is equipped with 2 transmit antennas. Assuming the receiver uses N>2 receive antennas, this scheme will exploit decorrelating detectors and receive antenna diversity to separate M users. Then a noncoherent decoder is derived for flat Rayieigh fading channels, which can provide a minimum diversity order of 2x(jV-1) to each co-channel user. Compared with the existing differential space-time coded CDMA systems, the proposed scheme has two main advantages: Firstly, only by deploying an additional receive antenna, it can effectively improve the system performance under the condition that the spectrum efficiency is increased by 1/3; secondly, it has only linear decoding complexity.

Key words Space-time code Differential modulation Multiuser interference Interference suppression

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