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基于多用户空间相关性的MIMO OFDM 下行链路资源分配

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摘要 针对多用户MIMO OFDM下行链路，满足各用户速率及误比特率需求的最小化系统功率问题，提出按用户空间相关性分组的子载波独占方式与共享方式相结合的资源分配算法。空间高度相关的用户分在一组，组内按比例公平原则以独占方式分配子载波；组间以收发结合的基于零空间交集的分组迫零算法实现子载波共享；用户以贪婪算法独立分配比特功率。仿真结果验证所提算法不仅系统总功率小于独占方式及基本迫零共享方式，而且频谱利用率高于独占方式、所需天线数小于基本迫零共享方式。

关键词 通信技术 多天线正交频分复用 多用户 自适应资源分配 迫零算法

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Resource allocation scheme based on multiuser spatial correlation for MIMO OFDM downlink

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Abstract With the goal of minimizing the overall transmit power while satisfying the required data rate, an adaptive algorithm combined exclusive manner with shared manner was proposed for multiuser MIMO OFDM systems in downlink scenario. Subcarriers allocation to users was conducted according to user spatial correlations in this algorithm. The users swith high spatial correlations were palced in same group, and on the basis of rule of propotion fairness, subcarriers were allocated in an exclusive manner in the same group. While in different groups, subcarriers were allocated in the shared manner using grouping zero forcing method. Then greedy method was used to allocate bits and power to different users. Simulation results show that the overall power of the proposed algorithm is less than both the exclusive manner and the shared manner, the spectrum efficiency is improved compared to the exclusive manner, and the number of antennas is less than that of the shared manner as well.

Key words communication MIMO OFDM multiuser adaptive resource allocation zero forcing

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