

论文

MIMO多中继辅助通信中基于最优功率分配的路由选择算法

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摘要:

考虑多个多天线中继站辅助的通信网,各中继站工作于放大转发(AF)模式,本文针对两跳半双工中继信道,提出一种基于最优功率分配的多天线路由选择算法。在总功率约束条件下,首先实现基站与中继间的最优功率分配,然后基于多天线中继模式,选出接收信噪比最大的一个中继进行传输。当功率完全分配给基站时,由于未使用中继传输,等价于选择一跳路由。与不进行中继选择的全工作模式相比,该算法不仅能达到满分集度,而且具有更好的中断概率性能和更大的系统容量。仿真结果表明,本文方法以较小的计算复杂度,使系统获得了较大的性能增益,并对于存在路径损耗的实用场景,该算法的性能优势仍然存在。

关键词: 中继增强型网络; AF模式; 路由选择; 最优功率分配

Routing Selection Algorithm with Optimal Power Allocation For MIMO Relay Cooperation Networks

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Abstract:

Considering Amplify-and-Forward cellular relay-enhanced networks with the help of one or more relay nodes,a multi-antenna routing selection algorithm is proposed based on optimal power allocation for the two-hop half-duplex relay channels,After implementing optimal power allocation given a fixed total power condition between the source and the relays,we propose a selection scheme where only one multi-antenna relay with the max received SNR is chosen to assist in transmission.When the base station uses all power resources for its transmission and none is for the relay,only direct link is chosen in transmission.It is shown that the selection-AF scheme maintains full diversity order,and at reasonable power levels has significantly better outage behavior and average throughput than the conventional all-participate scheme.Simulation results demonstrate that the proposed scheme greatly improves system performance with a low algorithm's complexity,and for actual situation with distance attenuation factor,the performance advantage is also in existence.

Keywords: Relay-enhanced network Amplify-and-Forward Routing selection Optimal Power Allocation

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