

论文

有限反馈分布式预编码协作通信系统及性能分析

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摘要

该文提出了一种有限反馈条件下的分布式预编码非正交协作分集系统(DP-NOCD)。该系统利用目的端的多天线特性,将中继信号进行预处理后在共享的信道资源上发送,从而同时提高了传统正交协作分集(OCD)系统的频谱效率和可靠性。利用译码转发(DF)中继信道模型,并将虚拟的两输入多输出信道在矢量空间分解为两个正交子信道,提出了一种系统误码率最小准则下的预编码方法。该方法能改善系统误码性能,且反馈量低。仿真结果表明,在理想协作场景下,与非协作系统和无干扰的OCD系统相比,DP-NOCD系统在误码率为 10^{-3} 时分别可获得5~6.2 dB和1~1.2 dB的增益。

关键词 [协作通信](#) [分布式预编码](#) [译码转发](#) [误码率](#) [频谱效率](#)

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Design and Performance Analysis of Precoded Cooperative Communication System with Limited Feedback

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Abstract

A Distributed Precoded Non-Orthogonal Cooperative Diversity (DP-NOCD) system with limited feedback is proposed, which utilizes the multi-antenna characteristic at the destination to make the preprocessed relay signals transmitted on the shared channel resources, so that the spectral efficiency and reliability of the traditional Orthogonal Cooperative Diversity (OCD) system can be improved simultaneously. With the Decode and Forward (DF) relay channel model and the virtual two-input multiple-output channel decomposed into two orthogonal sub-channels in the vector space, a precoding scheme is proposed to minimize the system Bit Error Rate (BER). The proposed scheme is effective in improving the BER performance and has a low feedback overhead. Simulation results show that in ideal cooperation scenarios, DP-NOCD system outperforms the non-cooperative system and the interference free OCD system by gains of 5~6.2 dB and 1~1.2 dB, respectively, when BER is 10^{-3} .

Key words [Cooperative communication](#) [Distributed Precoding \(DP\)](#) [Decode and Forward \(DF\)](#) [Bit Error Rate \(BER\)](#) [Spectral efficiency](#)

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