

应用

非对称双向中继信道中协作分集和网络编码的联合应用

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摘要:

本文应用非对称信道编码和网络编码技术实现了双向中继信道中非对称速率的传输。现实中无线通信环境具有差异性, 通信链路状况也不相同。利用非对称编码方式, 在较差链路引入更多的冗余信息来保证传输的可靠性, 也在较优链路采取较高的传输速率, 充分利用较优链路传输更多的信息。同时, 通过协作分集技术, 在接收端得到传输信息的多个副本, 可以实现无线通信系统的分集增益。在中继链路加入网络编码, 增加了系统的通信效率和编码增益。仿真结果表明, 通过非对称编码方式, 在较差链路端使用冗余更多的信道编码方式, 不但可以实现可靠性传输, 也比对称编码方式传输更多的信息。同时, 利用协作分集技术, 提供多个译码信息副本, 增加了译码的可靠性, 降低了系统误比特率。

关键词: 协作分集技术; 网络编码; 非对称调制; 信道差异

Joint use of cooperative diversity and network coding in Asymmetric Two-Way Relay Channel

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Abstract:

In this paper, we proposed a scheme for asymmetric data transmission in Three-Point Cooperative Communication System with asymmetric channel coding and network coding. Wireless communication environment is varied, and the conditions of the communication link are not the same either. The scheme with asymmetric channel coding ensures the reliability of communication in the poor environment. Meanwhile, it transmits more data in better links to make full use of system resources. Through cooperative diversity, the destination can receive multiple copies of the information to achieve a diversity gain in wireless communication systems. Applying network coding in relay can increase the communication efficiency and can enhance the coding performance of the system. Simulations show that asymmetric coding adds more redundancy in poor links not only can ensure the reliability, but also transmit more information in better links. Meanwhile, cooperative diversity can enhance the reliability of decoding with providing multiple copies of the information, and it also reduces the system bit error rate.

Keywords: Cooperative diversity network coding asymmetric coding Various channels

收稿日期 2012-04-23 修回日期 2012-08-26 网络版发布日期 2012-11-25

DOI:

基金项目:

国家自然科学基金项目(60972039); 江苏省自然科学基金项目(BK2010077)

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