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论文与技术报告

基于机会式网络编码的多用户信息交换

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摘要:

在两对用户通过一个公共中继节点的协作进行数据交换的无线通信环境下，该文研究了基于机会式网络编码的中继策略，即中继节点可以转发编码的分组，也可以转发未编码的分组的中继策略，说明了该中继策略与传统的复制重传中继策略相比能极大的减少系统功率消耗。传统的中继策略几乎必然导致分组的递交时延，而在机会式网络编码的中继策略下，中继节点为提高能量使用效率也可能导致某些分组递交时延增加。通过建立一个马氏链，该文刻画了在机会式网络编码的中继策略下每个分组的平均时延和平均功率消耗。仿真结果说明平均时延和平均功率消耗之间存在着某种折衷关系。对于缓冲区大小为1的情形，该文给出了这种折衷关系。

关键词： 机会式网络编码； 信息交换； 时延；功率消耗

Multiuser Information Exchange Based on Opportunistic Network Coding

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Abstract:

This paper investigates the strategy of relaying based on opportunistic network coding over wireless communication context with two pairs of users and one common relay exchanging their data, where the relay node can transmit either network-coded or un-coded packets, and presents that this strategy of relaying can substantially decrease the system power consumption against the traditional strategy of copy and forward. Although the traditional strategy can almost surely induce the delay for packets, the strategy of relaying based on opportunistic network coding can also bring in the same result if the relay node pursues just only the energy efficiency. Resorting to a Markov model, the paper characterizes the average delay and power consumption for each packet when using the relaying strategy based on opportunistic network coding. The results of simulation indicate that there exists some tradeo? between delay and power consumption. For the case of bu?er size M = 1, the tradeo? is presented.

Keywords: Opportunistic network coding information exchange delay;power consumption

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