一种改进的**Two-way**中继协作系统下的 节点选取和功率分配策略

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摘 要：

为了提高Two-way中继协作系统的总速率，在传统的Two-way DF中继协作系统模型下，介绍了一种双向中继选择（BRS）策略,即同时考虑中继节点处的接收信噪比和中继节点到目的节点的信道增益两个因素来实现最优中继选择。然后在选出了最优中继节点后，基于物理层网络编码协议(PNC)提出了一种新的Two-way中继协作系统的最优功率分配策略。仿真结果表明，在系统总功率较大的情况下，BRS策略较随机中继选择策略（RRS）在系统总速率方面约有 的提升。同时，提出的基于PNC的Two-way中继协作系统的最优功率分配(OPA)策略较等功率分配策略(EPA)平均取得了1 的增益，而比传统的One-way中继协作系统在系统总速率上约高出 。

关键词：无线传感器网络；中继选择和功率分配；物理层网络编码；最优功率分配；多接入信道；广播信道

Improved Strategies on Relay Selection and Power Allocation in a Two-way Cooperative Relay System

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Abstract:

For a traditional Two-way DF relay system, to enhance sum-rate of the system, this paper propose a bidirectional relay selection (BRS) strategy, which implements the optimal relay selection based on both received Signal-to-Noise Ratio (SNR) at the relay and channel gain from the relay to destination. Moreover, the optimal strategy on power allocation is also proposed in the paper, based on the physical network coding (PNC) protocol. Simulation shows that, when the total power of the system is large, the proposed BRS strategy has increment of the sum-rate comparing to a random relay selection (RRS) strategy. Meanwhile, the proposed power allocation strategy also gains about 1 in average over the equal power allocation (OPA) strategy. Also, Comparing to traditional One-way relay cooperative system, improvement on sum-rate can be obtained.

Keywords: Wireless Sensor Networks; Relay Selection and Power Allocation; Physical Network Coding; Optimal Power Allocation; Multi-Access Channel；Broadcasting Channel

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