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# 认知无线网络中一种基于放大转发的协作传输策略

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# A Cooperative Transmission Scheme Based on Amplify and Forward in Cognitive Radio Networks

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摘要 在不干扰主用户数据传输的条件下，通过次用户间的彼此协作传输，可以使认知无线网络获得明显的空间和时间分集增益，从而改善次用户传输性能。该文针对主次用户共存，主用户交替转移信道忙闲状态的网络环境下，提出了一种基于放大转发的协作传输方案，当主用户存在时机会的使用中继节点转发数据，并且对所提方案的无冲突传输时间进行了理论分析，给出了非协作传输和协作传输模式下的无冲突传输时间的解析表达式，理论分析和仿真结果表明，协作传输方案的无冲突传输时间明显优于非协作传输方案，次用户协作为认知无线网络带来可观的性能增益。

关键词： 认知无线电 协作传输 无冲突传输时间 放大转发

Abstract: Cognitive Radio Networks (CRNs) improve Secondary Users' (SUs) transmission performance through cooperative transmission between SUs without interfering the regular transmissions of the Primary Users (PU). In this paper, a new cooperative transmission scheme is proposed based on AF (Amplify and Forward) protocol while PU and SUs coexist in the same CRN and each PU can be either active (ON) or inactive (OFF) in any given slot. When the licensed frequency is occupied by the PU, SU can opportunist use the relay to transmit signals. Analytical expression of the non-interference transmission durations is given. Non-cooperative and cooperative schemes derived show the effect of cooperative transmission on the non-interference transmission durations performance. Besides, numerical experiments are conducted to verify the effectiveness of the proposed cooperative schemes. The increase of non-interference transmission durations by cooperative transmission confirms the advantages of the new scheme.

Keywords: Cognitive Radio (CR) Cooperative transmission Non-interference transmission durations Amplify and forward

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