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应用

# 时间空间联合频谱检测认知协作分集系统的中断概率分析

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摘要：

无线网络中利用协作分集技术可显著提高传输性能。认知无线网络中采用时间空间联合频谱检测能更充分地利用主用户的空闲频谱空洞。本文对采用时间空间联合频谱检测的认知协作分集系统的中断概率性能进行分析，给出采用选择解码转发中继协议时在瑞利衰落信道下的准确中断概率闭合式。分析和仿真结果表明：采用时间空间联合频谱检测的系统的中断概率性能优于单独时间频谱检测和单独空间频谱检测的系统，而协作分集技术的引入也明显改善了认知用户的传输性能。中断概率的理论结果对于衡量和评估认知网络的频谱检测方案、协作传输方案的性能有重要的理论和实用价值。

关键词： 协作分集；认知中继网络；时间空间联合频谱检测；中断概率

## Outage Probability Analysis for Cognitive Relay Network Employing Joint Temporal and Spatial Sensing

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Abstract:

Cooperative diversity technology can be utilized to upgrade the transmission performance of system remarkably in the wireless network. Idle spectrum hole can be more fully utilized through joint temporal and spatial sensing in the cognitive network. In this paper, the outage probability performance of the cognitive relay network employing joint temporal and spatial sensing where the selection decode-and-forward (SDF) cooperative transmission protocol is utilized is analyzed. The exact and closed outage probability expression is obtained in Rayleigh fading environment. It is shown from analysis and simulation results that the outage probability performance while employing joint temporal and spatial sensing is better than pure temporal sensing and pure spatial sensing, moreover, the transmission performance of cognitive user is improved greatly while introducing cooperative diversity technology. It is because the derived theoretical results on outage probability can be utilized to measure and evaluate the performance of spectrum sensing algorithms and cooperative transmission schemes in the cognitive network that they have important theoretical and practical values.

Keywords: Outage Probability

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