



### 基于分形盒维数的频谱感知技术研究

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## Spectrum Sensing in Cognitive Radios Based on Fractal Box Dimension

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摘要

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摘要 为了降低频谱感知的计算复杂度,提高感知性能,该文提出基于分形盒维数的频谱感知方法。由于噪声与信号盒维数值存在差异,将分形盒维数作为检验统计量。仿真结果表明,该方法在高斯白噪声环境下,具有良好的检测性能,对噪声不敏感。并且计算复杂度低,易工程实现。

关键词: 认知无线电 频谱感知 分形理论 分形盒维数

Abstract: To reduce the computational complexity of spectrum sensing and improve the spectrum sensing performance, a spectrum sensing method based on the fractal box dimension was proposed. As the box dimensions of noise and signal are different, the fractal box dimension is used as test statistics. The simulation results demonstrate the proposed method has good detection performance under Gaussian white noise, and it is not sensitive to the noise. Furthermore, this method is low computational complexity and easy to implement.

Keywords: Cognitive radio Spectrum sensing Fractal theory Fractal box dimension

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