

论文

基于谱图预处理的卫星通信信号盲检测

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摘要

传统功率谱检测是建立在噪声谱的均值和方差满足不随频率变化假设基础上的, 而实际非协作卫星通信中的噪声谱一般并不满足此假设, 导致该方法的检测性能受限。该文用滑动窗最小二乘法对接收信号进行预处理, 使噪声谱趋近满足上述假设, 由此提出了一种卫星通信信号的盲检测方法, 并推导了相对于传统功率谱检测方法的性能改善因子。仿真结果表明: 该方法在相同条件下检测性能一般明显优于传统的功率谱检测方法, 且具有计算量小、易于实现等优点。

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Blind Detection of Satellite Communication Signals Based on Spectrum Preprocessing

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Abstract

Traditional power spectrum detector is based on the assumption that mean and variance of background noise spectrum do not vary with frequency. However, actual noise spectrums generally do not meet the hypothesis in non-cooperative satellite communication environment, so the detector performance is restricted. In this problem, received signals are preprocessed by sliding widow least square to make noise spectrums satisfy the presumption. Consequently, a blind detection algorithm of satellite communication signals is presented, and improving factor of detection performance relative to power spectrum detector is also deduced. Simulation results indicate that under same conditions, the algorithm generally has better performance than power spectrum detector, which is a classical traditional blind detection method. The proposed algorithm is also easy to implement with low computation complexity.

Key words [Information processing technology](#) [Blind detection](#) [Least square](#) [Satellite communication signals](#)

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