

论文

## 利用ASTFT谱有效抑制WVD交叉项的方法

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摘要

该文分析了Wigner-Ville Distribution (WVD)中自项与交叉项相互关系,提出了一种利用自适应短时傅里叶变换(ASTFT谱)有效抑制WVD交叉项的新方法。该方法首先对信号进行ASTFT得到信号的ASTFT谱图,以确定出信号分量在时频平面内的位置,然后将ASTFT谱作为窗函数对信号的WVD进行加窗处理,从而有效消除WVD中的交叉项,并保留WVD的高分辨率和能量聚集性等优良特性。最后通过实例验证了该方法的有效性。

关键词 [维格纳分布\(WVD\)](#); [自适应短时傅里叶变换\(ASTFT\)](#); [交叉项](#); [时频分布](#)

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## A Method to Suppress Cross-Terms of Wigner-Ville Distribution Using ASTFT Spectrum

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Abstract

The rules of correlation between auto-terms and cross-terms of Wigner-Ville Distribution(WVD) are obtained by analyzing the WVD and a new method to suppress cross-terms of WVD using Adaptive Short-Time Fourier Transform (ASTFT) spectrum is put forward. Firstly, the signal ASTFT spectrum which can determine the signal component positions in the time-frequency plane is obtained. Then, window function, ASTFT spectrum, is selected to process the signal WVD. Thus the cross-term interference can be effectively restrained, and it retains the much finer characteristics of WVD, such as high resolution jointly in time and frequency and energy centralizing. The examples indicate that a better resolution and more effective suppression of cross-term interference is obtained in the end.

Key words [Wigner-Ville Distribution\(WVD\)](#) [Adaptive Short-Time Fourier Transform \(ASTFT\)](#) [Cross-terms](#) [Time-frequency distribution](#)

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