

论文

基于Hilbert谱白化的高分辨率地震资料处理

王季

中煤科工集团西安研究院, 陕西 西安 710075

摘要:

为了克服常规谱白化方法无法同时增强时域和频域局部细节的不足, 提出了一种对地震信号的Hilbert谱进行谱白化的高分辨率增强方法。首先利用Hilbert-Huang变换对地震信号进行时频分解, 再通过白化滤波器对其Hilbert谱进行谱白化。使用合成和实际地震数据与常规谱白化方法进行对比, 结果表明, 此方法能够有效增强地震信号时域和频域的分辨率, 使地震剖面更为连续和清晰, 并具有较高的信噪比。

关键词: Hilbert谱 谱白化 分辨率 HHT变换

High resolution seismic processing based on whitening of Hilbert spectrum

Abstract:

Conventional spectral whitening method cannot improve the detailed information of both time domain and frequency domain at the same time, to amend this problem, a novel method was proposed to improve the resolution of seismic signal by whitening its Hilbert spectral. This method decomposed the signal in time-frequency domain by the Hilbert-Huang transformation, and then applied the whitening filter to its Hilbert spectral. After comparing this new method with conventional method by applying them to synthetic seismic data and real seismic data, the results show that the new method can improve the resolution of signals both in time and frequency domains effectively while keeping a high S/N ratio, and improve the continuity of events in seismic profile.

Keywords: Hilbert spectrum; spectrum whiten; high resolution; HHT

收稿日期 2011-01-27 修回日期 网络版发布日期 2012-02-21

DOI:

基金项目:

国家科技重大专项资助项目(2011ZX05040-002); 国家重点基础研究发展计划(973)资助项目(2006CB202208)

通讯作者: 王季

作者简介: 王季(1977—), 男, 陕西西安人, 工程师, 博士

作者Email: wangji1008@gamil.com

参考文献:

本刊中的类似文章

1. 张艳丽, 张守祥. 基于Hilbert-Huang变换的煤研声波信号分析[J]. 煤炭学报, 2010, 35(1): 165-168
2. 郭秋英, 胡振琪. 基于小波变换的GPS快速精密定位[J]. 煤炭学报, 2007, 32(11): 1179-1182

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(3145KB)
- ▶ [HTML全文]
- ▶ 参考文献PDF
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ Hilbert谱
- ▶ 谱白化
- ▶ 分辨率
- ▶ HHT变换

本文作者相关文章

PubMed