

目录

小波分析在微地震信号处理中的应用研究

宋广东<sup>1,2</sup>, 刘统玉<sup>1,2</sup>, 王昌<sup>1,2</sup>, 张贞良<sup>3</sup>, 祁海峰<sup>1,2</sup>, 王金玉<sup>1,2</sup>

1.山东省光纤传感技术重点实验室, 山东省科学院激光研究所, 山东 济南 250014; 2.山东省科学院激光研究所, 山东 济南 250014; 3.山东兖矿集团鲍店煤矿生产技术科, 山东 济宁 273500

摘要:

通过探究小波分析特性选取适合微地震信号处理的基本小波, 并以实测微地震信号为例, 论述了利用 MATLAB小波工具箱成功实现微地震信号处理的过程。利用对称小波函数sym8、启发式阈值选择规则、软阈值函数、5层分解等参数实现了信号的自动去噪, 经检验去噪效果良好。通过尺度-频率转换成功绘制出频率-时间-小波系数图和时间频率谱, 为分析信号时频同步特性提供了有效手段。

关键词: 小波分析 sym8小波 多分辨率 微地震监测 时频谱

Application of wavelet analysis in the processing of micro seismic signal

SONG Guang-Dong<sup>1,2</sup>, LIU Tong-Yu<sup>1,2</sup>, WANG Chang<sup>1,2</sup>, ZHANG Zhen-Liang<sup>3</sup>, QI Hai-Feng<sup>1,2</sup>, WANG Jin-Yu<sup>1,2</sup>

1.Shandong Provincial Key Laboratory of Optical Fiber Sensing Technology, Laser Institute, Shandong Academy of Sciences, Jinan 250014, China; 2.Laser Institute, Shandong Academy of Sciences, Jinan 250014, China; 3.Department of Production Technology, Baodian Coal Mine, Jining 273500, China

Abstract:

We selected an appropriate wavelet basis for the processing of micro seismic signal by investigating the characteristics of some wavelet bases. We also addressed the process of employing the wavelet toolbox in MATLAB to perform the processing of the measured micro seismic signal. Sym8 wavelet basis, the heuristic threshold selection rule, soft threshold function and five layer decomposition were employed to automatically suppress signal noise, which was shown to have better noise suppression effect. We drew a frequency time wavelet coefficients chart and time frequency spectrum (TFS) by scale frequency conversion, which provided an effective approach for analyzing the characteristic of signal time and frequency synchronization.

Keywords:

收稿日期 2011-02-13 修回日期 网络版发布日期

DOI:

基金项目:

山东省自主创新成果转化重大专项(2008ZHZX1A0308); 山东省科学院科学技术发展计划(鲁科院字[2008]102号)

通讯作者: 宋广东(1981-), 男, 助理研究员, 工学硕士, 研究方向为矿震监测与信号分析处理。

作者简介:

作者Email: guangdongsgd@163.com

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