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A Wavelet Packet Approach to Earthquake and Mining shocks Wave Classification

Xuesong He[1] and Shiyu Li[1] and Ping Shen[1]
[1]*Institute of Geophysics, Laboratory of Geophysics, CEA, Beijing 100081, China*

Signals possessing non-stationary information are not suited for detection and classification by traditional Fourier methods. An alternate means of analysis needs to be employed so that valuable time-frequency information can be extracted. The Wavelet Packet transform (WPT) is such a timefrequency analysis tool. This paper describes an approach to signal classification that may satisfy the need of a non-parametric feature extraction algorithm that best adapts to sets of pre-classified data. There are 18 mining shocks and 16 earthquake recorded by three-component seismographs in the seismic network in Lining Province from Jan. 1, 2000 to June 31, 2003 and 15 mining shocks and 13 earthquake recorded by three-component seismographs in the seismic network in Huabei from Jan 1, 2000 to Dec 31, 2002. Using WPT method, a parsimonious set of features is determined from above mining shocks and earthquake data. Finally, the feature set is tested on signals in the waves of many mining shocks and earthquakes.

Keywords: classification, mining shocks, earthquake, wavelet packet