

Seismic Time-Frequency analysis by Empirical Mode Decomposition

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Abstract

Time frequency analysis plays a significant role in seismic data processing and interpretation. Complete ensemble empirical mode decomposition (CEEMD) decomposes a seismic signal into a sum of oscillatory components, with guaranteed positive and smoothly varying instantaneous frequencies. Analysis on real data demonstrates that this method promises higher spectral-spatial resolution than the short-time Fourier transform. Application on field data thus offers the potential of highlighting subtle geologic structures that might otherwise escape unnoticed.