



EMD Method Applied to Identification of Logging Sequence Strata

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Abstract

In this work, we compare Fourier transform, wavelet transform, and empirical mode decomposition (EMD), and point out that EMD method decomposes complex signal into a series of component functions through curves of local mean value. Each of Intrinsic Mode Functions (IMFs – component functions) contains all the information on the original signal. Therefore, it is more suitable for the interface identification of logging sequence strata.

Well logging data reflect rich geological information and belong to non-linear and non-stationary signals and EMD method can deal with non-stationary and non-linear signals very well. By selecting sensitive parameters combination that reflects the regional geological structure and lithology, the combined parameter can be decomposed through EMD method to study the correlation and the physical meaning of each intrinsic mode function. Meanwhile, it identifies the stratigraphy and cycle sequence perfectly and provides an effective signal treatment method for sequence interface.

Key words: empirical mode decomposition (EMD), intrinsic mode function (IMF), logging data processing, sequence stratigraphy.