

Optimizing Approach for Sifting Process to Solve a Common Type of Empirical Mode Decomposition Mode Mixing

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Abstract : Empirical mode decomposition (EMD), a new data-driven of time-series decomposition, has the advantage of supposing that a time series is non-linear or non-stationary, as is implicitly achieved in Fourier decomposition. However, the EMD suffers of mode mixing problem in some cases. The aim of this paper is to present a solution for a common type of signals causing of EMD mode mixing problem, in case a signal suffers of an intermittency. By an artificial example, the solution shows superior performance in terms of cope EMD mode mixing problem comparing with the conventional EMD and Ensemble Empirical Mode decomposition (EEMD). Furthermore, the over-sifting problem is also completely avoided; and computation load is reduced roughly six times compared with EEMD, an ensemble number of 50.

Keywords : empirical mode decomposition (EMD), mode mixing, sifting process, over-sifting