1035-42-1048

Zhaohua Wu* (zhwu@cola.iges.org), 4041 Powder Mill Rd., Suite 302, Calverton, MD 20705, and **Norden E Huang** (Norden@ncu.edu.tw), Research Center for Adaptive Data Analysis, National Central University, 300 Jhongda Road, Chungli, Taiwan 32001, Taiwan. *Ensemble Empirical Mode Decomposition: A Noise Assisted Data Analysis Method.*

A new Ensemble Empirical Mode Decomposition (EEMD) is presented. This new approach consists of sifting an ensemble of white noise-added signal and treats the ensemble mean as the final result. Finite amplitude white noise is necessary to force the ensemble to make the different scale signals to collate in the proper intrinsic mode functions (IMF) dictated by the dyadic filter banks. As the EMD is a time space analysis method, the white noise is averaged out with sufficient number of trials; the only persistent part survives the averaging process is the signal, which is then treated as the true and more physical meaningful answer. The effect of the added white noise is to provide a uniform reference frame in the time-frequency space; therefore, the added noise collates the portion of the signal of comparable scale in one IMF. With this ensemble mean, one can separate scales naturally without any a priori subjective criterion selection as in the intermittence test for the original EMD algorithm. This new approach utilizes the full advantage of the statistical characteristics of white noise to perturb the signal in its true solution neighborhood; therefore, it represents a substantial improvement over the original EMD and is a truly noise assisted data analysis (NADA) method. (Received September 18, 2007)