Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Application of Hilbert-Huang Transform for the determination of instantaneous low frequency of Plasma waves[1] EKONG NATHANIEL, NATASHA BELOFF, ANDREW BUCKLEY — Downstream of a quasi-perpendicular bow shock of the Earth, various wave modes associated with the different boundaries have been confirmed and different methods have been used to find frequency and instantaneous frequency of the different modes. We applied Hilbert-Huang Transform in the determination of instantaneous frequency by decomposing the data observed by in-situ spacecraft in certain region in space called the Magnetosheath into intrinsic mode functions (IMFs) using empirical mode decomposition (EMD) technique of Huang et al., 1998. Instantaneous frequencies for the different IMFs were computed using Hilbert transform. The determined instantaneous frequency supports the non-stationary and non-linear nature of the data. The instantaneous wave vector was then computed. The observed data were taken from FGM instrument on Cluster II mission which provides 3-dimensional advantage for this analysis, and the results compared with the instantaneous frequency computed using simple Hilbert transform with electric field measurements of Cluster II mission already carried out.

[1]I am grateful to the FGM team and ESA Cluster Active Archive for their good work, which provided data for this analysis.

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Date submitted: 12 Aug 2009 Electronic form version 1.4