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Geoscientific Instrumentation Methods and Data Systems Discussions

Interactive comment on "An Efficient Algorithm for Improved Doppler Profile Detection of MST Radar Signals" *by* Nimmagadda Padmaja et al.

Anonymous Referee #2

Received and published: 26 December 2017

Paper Title: "An efficient algorithm for improved Doppler profile detection of MST radar signals"

Authors: N. Padmaja, S. Varadarajan, P. Yashoda, and E. Ramyakrishna

Manuscript #: GI-2017-9

General Comments

The manuscript reports on the application of HHT (Hilbert Huang Transformation) to Doppler spectra estimation of atmosphere radar measurements. It introduces a new methodology for potential improvement of Doppler spectra estimation and may potentially be suitable for publication. However, the theory is not described well. The improvement is not specifically described. Thus, the paper needs substantial revision

before publication.

The major concerns are as follows:

Line 67: IFM should be explained more in detail, not only referring to an article, because it one of the essential parts of the method proposed in this paper.

Line 78: No conditions to be satisfied are given in the Step (c).

Line 85: How is it determined whether the residual contains useful information or not?

Line 98: What is the SD value typical to? Does it applies to any signals or some specific cases?

Line 106: Define tau_j, not only referring to articles.

Line 114-117: Equations (3) and (4) are identical.

Line 121: Define "N".

Line 133: Define the ".r" format.

Line 134: Define the ".mat" format.

Line 188: Why can the peaks in HHT results be identified as "true" peaks?

Line 194: Why can the Doppler estimated by HHT be regarded as "accurate"? There is no reference or control data. More validation is needed for improvement of Doppler parameters.

Specific Comments

Line 29: "Kms" should be "km" or "kilometers". Line 30: "echo returns" should be "echoes". Line 40: "Km" should be "km". Line 43: "very high resolution" is ambiguous. How high the resolution is depends on applications. Specific numbers should be given. Line 66: "same" should be "the same". Line 72: "x(t)" should be "X(t)". Line 113: The sentence is incomplete. Line 192: "Table1" should be "Table 1".

Figures: Labels are too small to read. Figure quality is too low to recognize.

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