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# of coherence influence on the detection capabilities of the IMS network

The loss of coherence in the infrasonic arrays have been introduced by Mack & Flinn (1971) and have since been heavily studied (Blandford, 2002) , (Nouvellet, 2013), (Green, 2013). The loss of coherence (LOC) is derived from uncertainties on the source wavefront. This leads to a loss of coherence that is function of both the distance between the sensors, and the frequency. In this study, we propose an algorithm to simulate the LOC which is used to compute the performance of the usual detectors (consistency, MCCM, F-Detector) in presence of loss of coherence. We show that in case of strong LOC, the choice a small subset of sensors can increase the detection capabilities of a IMS station. However, in case of strong noise it is recommended to use the maximum number of sensors for the detection. We finally give a strategy to select the optimal subset of sensors based on the amplitude of the loss of coherence and the SNR.

Primary author: NOUVELLET, Adrien (1CEA/DAM/DIF)

Presenter: NOUVELLET, Adrien (1CEA/DAM/DIF)

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