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# of a Generalized Least Squares Beamformer for Infrasonic Data Analysis

As infrasound research interests move to lower signal-to-noise ratio (SNR) signals, it is necessary to enhance detection capabilities, particularly in noisy environments. The application of an adaptive F-detector has successfully reduced false detection rates attributed to coherent noise across array elements; however, the detector is applied post-processing after analysis using a standard (Bartlett) beamformer, which raises the detection threshold and can lead to missed detections. Application of a generalized least squares (GLS) beamformer can enhance processing of transient infrasonic signals, particularly in the presence of correlated noise. The GLS beamformer enhancement will lead to improved capabilities for accurately detecting low amplitude infrasonic events of interest that would not normally produce a sufficiently high F statistic to be declared a detection. Application of this beamformer to data sets with various background noise environments (strong microbaroms, wind farms, etc.) will be presented.

Primary author: DANNEMANN, Fransiska (Los Alamos National Laboratory)

Presenter: DANNEMANN, Fransiska (Los Alamos National Laboratory)

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