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Preferred format: Powerpoint presentation with computer projector

Abstract submission, possible subject areas:

Data processing

Design and performance of infrasonic arrays

**An investigation of the uncertainties associated with estimates of velocity
and direction-of-arrival for infrasound signals**

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Passive detection of an infrasound signal requires a reliable determination of the uncertainties in the estimates velocity (v) and direction-of-arrival (\mathbf{q}). Multiple sources, propagation effects, non-planar wavefronts and medium anisotropies can degrade precision; however, uncertainty in the estimates of v and \mathbf{q} is fundamentally governed by array geometry. We develop a general approach to determine the statistical confidence in estimates of v and \mathbf{q} for an arbitrary array. This determination is more useful than the explicit calculation of the Cramér-Rao lower bound, which is inherently optimistic. As an extension of our earlier work, we present the results of uncertainty analyses of several infrasound signal types. Data are drawn from our CTBT Infrasound Station at Windless Bight, Antarctica (I55US), our array in Fairbanks, Alaska (now being expanded to become I53US), and an extensive ensemble of simulated signals from arrays of various geometries. Such analysis allows us to ascertain the reliability of signal detections for various array geometries, processing techniques and sensor/hardware configurations.