

Direction of Arrival (DoA) Performance of Several Acoustic Vector-Sensor Configurations in the Reverberant Environment

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Abstract

Several acoustic vector-sensor (AVS) configurations have been tested for direction of arrival (DoA) estimation in a diffused reverberant environment using pressure gradient method. The discrete microphones have been arranged with different geometrical placement and pressure gradients have been estimated for finding DoA of an acoustic source. The received signals at the microphones for different reverberation time, different duration and different angular locations have been generated using COMSOL Multiphysics® software and are used to estimate DoA of single sound source. It has been observed that the DoA error performance is different for different microphone configurations without reverberations [Mohd Wajid et al]. However, in the diffused reverberant environment all configurations have performed identically, provided received signals are of same duration.

Reference

Mohd Wajid et al. "Design and analysis of air acoustic vector-sensor configurations for two-dimensional geometry." *The Journal of the Acoustical Society of America* 139.5 (2016): 2815-2832.