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Estimating 3D-Position of a Stationary Random Acoustic Source Using Bispectral Analysis of 4-Point Detected Signals

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Abstract : To develop the useful acoustic environmental recognition system, the method of estimating 3D-position of a stationary random acoustic source using bispectral analysis of 4-point detected signals is proposed. The method uses information about amplitude attenuation and propagation delay extracted from amplitude ratios and angles of auto- and cross-bispectra of the detected signals. It is expected that using bispectral analysis affects less influence of Gaussian noises than using conventional power spectral one. In this paper, the basic principle of the method is mentioned first, and its validity and features are considered from results of the fundamental experiments assumed ideal circumstances.

Keywords : 4-point detection, a stationary random acoustic source, auto- and cross-bispectra, estimation of 3D-position
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