

A method of multi-channel reference signals acquiring in broadband

ANC (PDF)

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Title: A method of multi-channel reference signals acquiring in broadband ANC

作者: [马令坤](#); [黄建国](#); [张立杰](#);

College of Marine Engineering, Northwestern Polytechnical University, Xi' an 710072, China

Author(s): [MA Ling-kun](#) [HUANG Jian-guo](#) [ZHANG Li-jie](#)

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摘要: In a flank array on an unmanned underwater vehicle (UUV), self-generated noise which has broadband and colored spectrum property in frequency and spatial domain is the main factor affecting the performance of weak signal detection, so the technique of adaptive noise cancellation (ANC) as well as physical denoising and active noise cancellation are often used in practice. Because ANC is based on correlations, improvements in performance come from better correlation between reference signals and primary signals. Taking full advantage of the characteristics of flank arrays and the characteristics of information obtained from hydrophones, a new method for reference signal acquisition for adaptive noisecancellation is proposed, in which the multi-channel reference signals are obtained by accurate delaying for a given direction of arrival (DOA) and differencing between adjacent outputs of array elements. The validity of the proposed method was verified through system modeling simulations and lake experiments which showed good performance with little additional computational burden.

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