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On the use of a split-beam array for tracking a moving talker. (A)

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Microphone arrays have been used in an audio-teleconferencing environment to pick up the speech signal from a known direction in the presence of noise and reverberation. In current algorithms, the direction of interest is obtained by measuring the output of a beamformer at a finite set of look directions and comparing it to a threshold. Unless the set of look directions is made sufficiently large, this method is not well suited to track a moving talker. In this paper a split-beam array configuration is used for the tracking problem. The time delay between the two halves of the array is obtained by a generalized cross-correlation method. A one-step Kalman predictor is then used to predict the delay for the next frame. This value is used to steer the beamformer. The system has been tested on computer-simulated data which modeled a talker moving along a linear trajectory in a reverberant room. Results indicate that this method can provide reliable estimates of the talker bearing angle in highly reverberant environments. [Work supported by Bell Northern Research.]

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ABSTRACT

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