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Adaptive Characterization of Near and Far field Elements in the Soundscape

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Characterization of a soundscape through objective parameters relies on our understanding of psychoacoustics and ability to model the complex signal processing of the mind. Certain physical parameters such as loudness and timbre are easily retrieved from data while other descriptive parameters are more difficult to measure objectively. Several signal processing algorithms are presented here in the context of describing a soundscape in terms of keynote sounds (background noise) and sound signals (foreground sounds). Simulations and stereo field data recorded in San Diego are analyzed. Adaptive matched field processing is used in conjunction with conventional spectral analysis for the detection and categorization of near field events. These sounds are then removed to provide a more accurate description of keynote sounds. Spatial distribution of the soundscape is measured using conventional beamforming algorithms.