Sound Source localization in 2D and 3D using Delay and Sum Beamforming

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ABSTRACT

The „acoustic camera“ is a measurement tool using Delay and Sum Beamforming which joined the field of acoustics a few years ago. This technology calculates the actual sound scene into a visual sound map, which consists of a superposition of different sound sources. The basic principle relies on the accurate calculation of the specific runtime delays of acoustic sound emissions radiating from several sources to the individual microphones of an array. User of such systems get an extremely fast understanding of the sound field through easy interpretable acoustic maps presented in 2D and 3D visualisations.

Today’s IT–technology allowed scientists at the „society for the promotion of applied computer sciences“ in Berlin (GfaI e.V.), Germany, to develop the first practically usable system for mobile and interactive applications in sound source imaging. The technology is designed to be simple, robust and flexible to be applied in diverse acoustic environments.

This presentation shall give an overview of the different methods, examples of possible applications, physical limits, restrictions and future perspectives of this new technology.