

## Surrounding Audio systems from Single-point Directed and Located Speakers

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Humans perceive sound source positions based on information of interaural level difference (ILD) and interaural time difference (ITD). Conventional stereophonic sound system uses this property to make illusion of the sound image. This technology is evolving by expanding the number of channels, such as 5.1 ch or 22.2 ch, for more stereophonic sound field reproduction. However, for home use it requires space and some knowledge to install even 5.1 ch. In recent years, super - directional speakers using ultrasound made us possible to create point sound sources in the air. By arranging an actual sound source which is not virtual in the air, it is possible to solve the problem of the conventional system. In this paper, subject experiments learned from previous studies were undertaken with the aim of comparing with phantom source created from two speakers. The results, it was found that the directivity of the ultrasonic speaker is more clearly compared with the diffusion from the focal point, and the sound reflected by the wall surface produces a more clear sound image.

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