

## **HEAD RELATED TRANSFER FUNCTION MEASUREMENT**

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Head-Related Transfer Function (HRTF) is the key technology in virtual sound reproduction. The most accurate and direct way to obtain structural HRTFs is by experimental measurement. In 1995, Gardner and Martin from MIT measured HRTFs using a KEMAR. In 2001, the CIPIC HRTF dataset was measured by Algazi et al. which consists of 45 individual HRTF datasets obtained from 43 persons and a KEMAR (with two different pinnae models). These two HRTF databases are conducted in distal region and are widely used for far field HRTF research. But in the proximal region, only limited related HRTF datasets exist. The reason might be the lack of an approximate point sound source for measuring HRTFs in proximal region. In this tutorial, we introduce a measurement of head-related transfer functions (HRTFs) with high spatial resolution including distal and proximal region. This HRTF measurement was conducted by a modified spark gap which could be seen as a point sound source. The evaluation experiments show that the spark gap is qualified to be an acoustic point source from the viewpoints of frequency response, directivity, power attenuation, and stability. Using this spark gap, high spatial resolution HRTFs and structure-HRTFs were measured with distances from 20 to 160 cm, elevations from 40 to 90 degrees, and azimuths from 0 to 360 degree. To close, some sample virtual sounds are given to verify this HRTF database.