Abstract
A freely available collection of Head-Related Impulse Response (HRIR) measurements is introduced. The impulse responses were acquired in an anechoic chamber using a KEMAR manikin at four different loudspeaker distances – 3 m, 2 m, 1 m and 0.5 m – reaching from the far field to the near field. The loudspeaker was positioned at ear height and the manikin was rotated with a high-precision stepper motor in one degree increments. Besides the raw HRIRs also datasets are available which have been compensated for the use with specific headphone models.

Introduction
In order to localize a sound source, the human auditory system takes advantage of the time lag and level difference between the two ear signals as well as cues added by reflection and diffraction by torso, head and external ears [1]. A head-related impulse response (HRIR), acquired under free-field conditions, is able to describe these features. Several databases of HRIRs are freely available [2, 3, 4], but their angular resolution in the horizontal plane is limited and only [4] contains measurements for more than one source distance (0.8 m and 3 m).

For distances larger than 1 m the distance between the manikin and the source is assumed to have no influence on the binaural cues, only the amplitude decreases for larger distances [5]. If the source is positioned closer to the listener, changes in the binaural cues have to be considered. This study will provide HRIR databases measured in the horizontal plane with a resolution of 1° for sources positioned at a distance of 0.5 m, 1 m, 2 m and 3 m.

HRIR Databases
The HRIR databases described here are freely available under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 license and can be downloaded at

http://dev.qyu.tu-berlin.de/projects/measurements/wiki

The datasets are available in different formats suitable for a variety of applications: .mat files for use in GNU octave and Matlab, .daff files in the Open Directional Audio File Format (OpenDAFF), an emerging open standard for spatial audio data, and .wav files for use in the SoundScape Renderer (SSR).

References