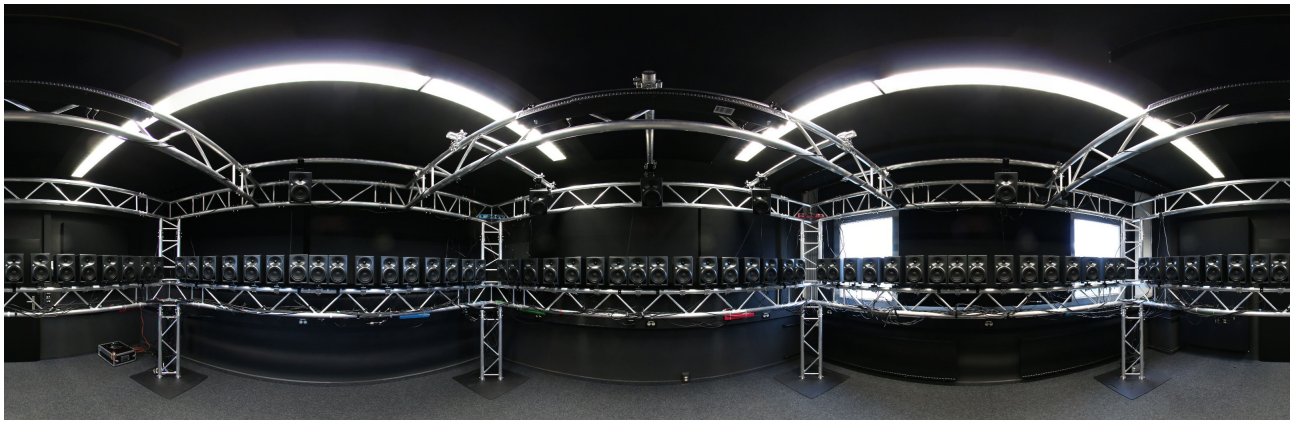

Database of single-channel and binaural room impulse responses (RIRs and BRIRs) of a 64-channel loudspeaker array for different room configurations

This database contains RIR and BRIR measurements performend in July 2014 at the Audio Lab of the Institute of Communications Engineering, University of Rostock. The measurements are described in detail in this publication:

Vera Erbes, Matthias Geier, Stefan Weinzierl, Sascha Spors (2015): Database of single-channel and binaural room impulse responses of a 64-channel loudspeaker array. Proc. of the 138th Int. AES Convention, Warsaw, Poland.

When you use our data in your work, please reference our paper and/or the DOI:

`http://dx.doi.org/10.14279/depositonce-87`

The data is provided in the Spatially Oriented Format for Acoustics (SOFA). RIRs and BRIRs are arranged according to the conventions GeneralFIRE 1.0 and MultiSpeakerBRIR 0.3, respectively. Please refer to the specifications on `http://www.sofaconventions.org` for details on the file format. A Matlab-API is available at `http://sourceforge.net/projects/sofacoustics/`. As the BRIR files are quite big, it is recommended to use partial loading when you do not need all data at once.

The naming scheme of the files is:

<RIR/BRIR>_<absorber configuration>_<receiver position>_Emitters1to64.sofa

Though also contained in the SOFA files, the coordinates of the loudspeakers are given in table 1 for convenience. The origin of the coordinate system is at the centre of the array at the height of the loudspeakers. An overview of the listening room with the loudspeaker array and the coordinate system is given in fig. 1.
Furthermore, the database contains pictures taken during the measurements inluding a series of pictures of each wall and egde of the room which illustrates the positioning of absorbers. This picture series starts at the wall with the windows and shows the other walls while turning clockwise.
Table 2 gives the reverberation times of the room in octave bands for the different absorber configurations.

[1] `http://creativecommons.org/licenses/by/4.0/`

Addition on 10th February 2016: You can find compensation filters for the headphone transfer functions (HpTF) of several headphone types here:

DOI 10.5281/zenodo.45876

These HpTF compensation filters are calculated from measurements made with the KEMAR 45BA with large ears that has been used for this RIR and BRIR database. The raw measurements and a Matlab script that calculates the compensation filters from the measurements is included as well. Details and licensing terms can be found under the above DOI.

Table 1: Coordinates of loudspeaker positions relative to centre of array for all 64 loudspeakers. z-coordinate is always 0. The data is arranged so that loudspeaker number 57-8, 9-24, 25-40 and 41-56 make up one side of the rectangular array.

#	x in m	y in m	#	x in m	y in m
57	1.8800	-1.6900	25	-1.8800	1.6875
58	1.8800	-1.4975	26	-1.8800	1.5000
59	1.8800	-1.2500	27	-1.8800	1.2525
60	1.8800	-1.0200	28	-1.8800	1.0200
61	1.8800	-0.7725	29	-1.8800	0.7750
62	1.8800	-0.5475	30	-1.8800	0.5500
63	1.8800	-0.3025	31	-1.8800	0.3050
64	1.8800	-0.0625	32	-1.8800	0.0625
1	1.8800	0.1275	33	-1.8800	-0.1300
2	1.8800	0.3100	34	-1.8800	-0.3125
3	1.8800	0.5400	35	-1.8800	-0.5325
4	1.8800	0.7725	36	-1.8800	-0.7625
5	1.8800	1.0200	37	-1.8800	-1.0125
6	1.8800	1.2700	38	-1.8800	-1.2625
7	1.8800	1.4975	39	-1.8800	-1.5000
8	1.8800	1.6775	40	-1.8800	-1.6900
9	1.6850	1.8800	41	-1.6925	-1.8800
10	1.4950	1.8800	42	-1.5050	-1.8800
11	1.2525	1.8800	43	-1.2625	-1.8800
12	1.0200	1.8800	44	-1.0250	-1.8800
13	0.7725	1.8800	45	-0.7850	-1.8800
14	0.5475	1.8800	46	-0.5550	-1.8800
15	0.3025	1.8800	47	-0.3125	-1.8800
16	0.0575	1.8800	48	-0.0625	-1.8800
17	-0.1300	1.8800	49	0.1250	-1.8800
18	-0.3150	1.8800	50	0.3050	-1.8800
19	-0.5375	1.8800	51	0.5250	-1.8800
20	-0.7725	1.8800	52	0.7625	-1.8800
21	-1.0175	1.8800	53	1.0075	-1.8800
22	-1.2700	1.8800	54	1.2775	-1.8800
23	-1.4975	1.8800	55	1.4925	-1.8800
24	-1.6900	1.8800	56	1.6825	-1.8800

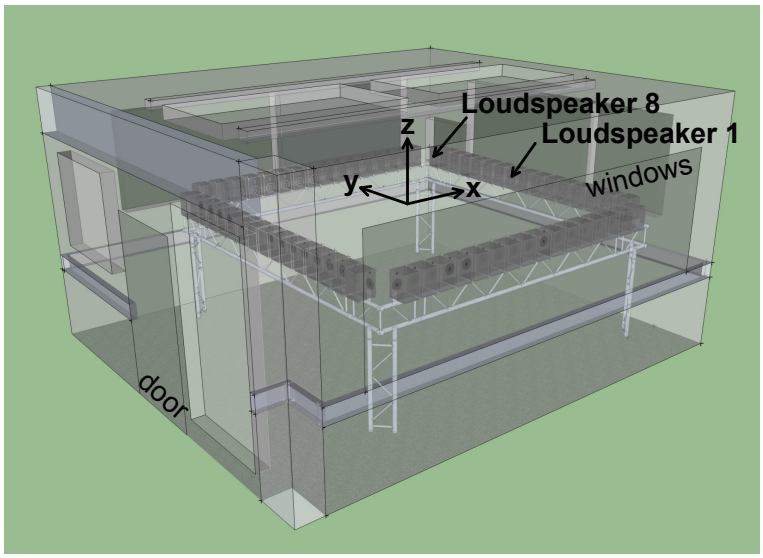

Figure 1: Loudspeaker array in room with broadband absorbers (grey cuboids) at walls and ceiling, but not in front of the windows. During the measurement, there were additional trusses above the loudspeakers. Coordinate system and loudspeaker numbering are indicated.

Table 2: Reverberation times (s) in octave bands for different absorber configurations

Absorber configuration	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
no absorbers	1.42	1.44	1.15	0.94	0.87	0.69	0.52
without ceiling absorbers	0.37	0.40	0.38	0.37	0.38	0.32	0.27
all broadband absorbers	0.32	0.32	0.32	0.31	0.29	0.27	0.24
additional absorbers	0.29	0.23	0.21	0.25	0.22	0.20	0.17