An Anechoic Recording of Demosthenes' 1st Olynthic Oration in German

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Figure 1: Speaker Boris Freytag during the recording session in the anechoic chamber of the TU Berlin.

General Information

This data set contains two anechoic recordings of an excerpt of Demosthenes' 1st Olynthic Oration in expressive and loud speech in German language. The audio recordings were made as part of *Analogue Storage Media – Auralization of Archaeological Spaces*, a project at *Image Knowledge Gestaltung* Cluster of Excellence at the Humboldt Universität zu Berlin.

The two versions of the speech were presented by the actor Boris Freytag reciting the translation by Wolfhart Unte[1]. The audio recordings were made in the anechoic chamber of TU Berlin.

This documentation focuses on the content of the data set as well as the recording procedure and a frequency analysis of the signals. If you use this data set please cite:

> Christoph Böhm, Felicitas Fiedler, Stefan Weinzierl, Erika Holter, Susanne Muth, Una U. Schäfer, Sebastian Schwesinger (2019): *An Anechoic Recording of Demosthens' 1st Olynthic Oration in German.* DOI: http://dx.doi.org/10.14279/depositonce-8537

License

[1] Wolfhart Unte (2002). Demosthenes: Politische Reden, Reclam Stuttgart, 46-49

[2] To view a copy of this license, visit `http://creativecommons.org/licenses/by-nc-sa/4.0/` or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

Data base description

The data set includes the loud and expressive speech as Wave files. The complete file structure is shown in Table 1.

The anechoic audio recordings are ready to be used for auralizations. The recorded speech signals are raw recordings, digitally edited but without further sound processing.

Table 1: File structure

Category	Microphone	File	Format
Audio	KM 130	Demosthenes_1st_Olynthic_Oration_loud.wav	WAV, Mono, 24 Bit, 48 kHz
Audio	KM 130	Demosthenes_1st_Olynthic_Oration_expressive.wav	WAV, Mono, 24 Bit, 48 kHz

Recording Setup

The two versions of Demosthenes' speech were consecutively recorded in the anechoic chamber of TU Berlin. The chamber has a volume of 1070 m^3 and a lower frequency limit of 63 Hz. The recording was done with a Neumann KM 130 omnidirectional microphone at a distance of 1 m to the speakers mouth. With an RME Fireface UFX the signals were A/D converted, amplified and finally recorded with the Ardour DAW. In addition, the sound pressure level was recorded with a calibrated NTI sound level meter XL2 at the same distance.

Spectrum Analysis

Subsequently, the octave and third octave levels of the two anechoic speech recordings were calculated. The indicated levels refer to the reference level recorded with the level meter. Tables 2 to 5 show the unweighted octave and third octave band levels, as well as the unweighted and the A-weighted sum level. Corresponding plots are shown in Figures 2 to 5.

Table 2: Octave band and sum levels, loud speech

Frequency in Hz	125	250	500	1000	2000	4000	8000	**sum level in dB(Z)**	**sum level in dB(A)**
SPL in dB	53.75	79.05	85.97	84.78	83.88	76.64	67.47	90.30	89.47

Table 3: Third octave band levels, loud speech

Freq. in Hz	100	125	160	200	250	315	400	500	630	800	1000
SPL in dB	37.13	44.34	53.36	62.53	72.14	78.22	75.96	78.05	84.94	80.62	76.32
Freq. in Hz	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
SPL in dB	81.98	82.04	78.11	75.02	76.09	68.31	59.27	62.98	64.42	59.89	

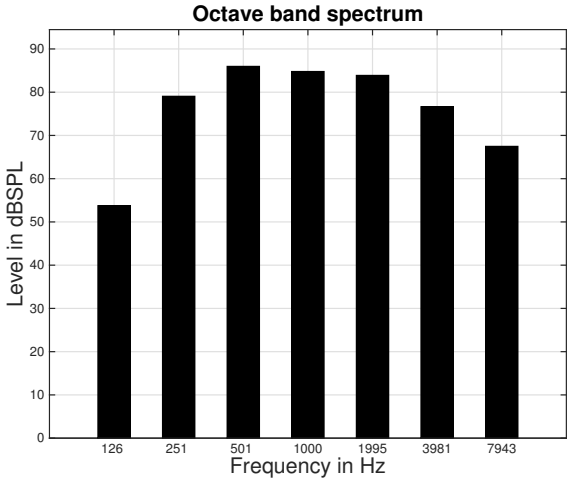

Figure 2: Octave band levels, loud speech

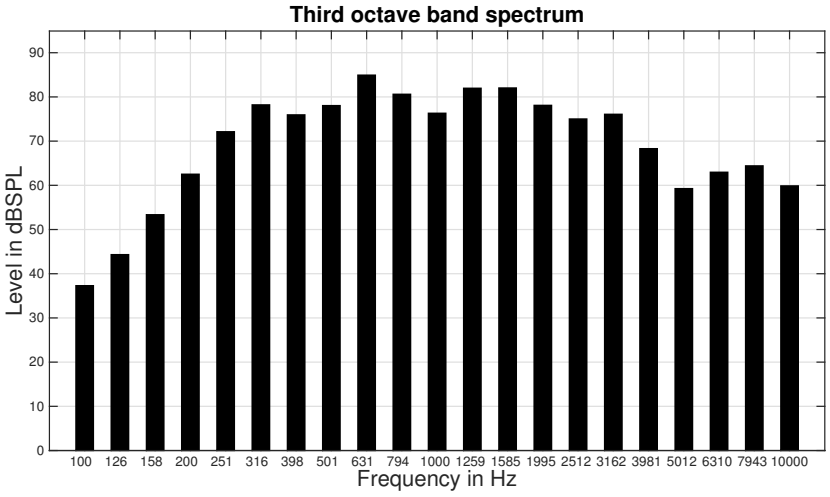

Figure 3: Third octave band levels, loud speech

Table 4: Octave band and sum levels, expressive speech

Frequency in Hz	125	250	500	1000	2000	4000	8000	**sum level in dB(Z)**	**sum level in dB(A)**
SPL in dB	62.99	79.49	83.53	82.09	79.80	71.03	66.87	87.71	86.31

Table 5: Third octave band levels, expressive speech

Freq. in Hz	100	125	160	200	250	315	400	500	630	800	1000
SPL in dB	45.24	53.34	62.66	70	76.72	75.3	74.99	81.18	78.69	76.93	75.50
Freq. in Hz	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
SPL in dB	79.31	77.51	74.78	71.37	70.05	63.98	58.07	61.04	63.75	61.25	

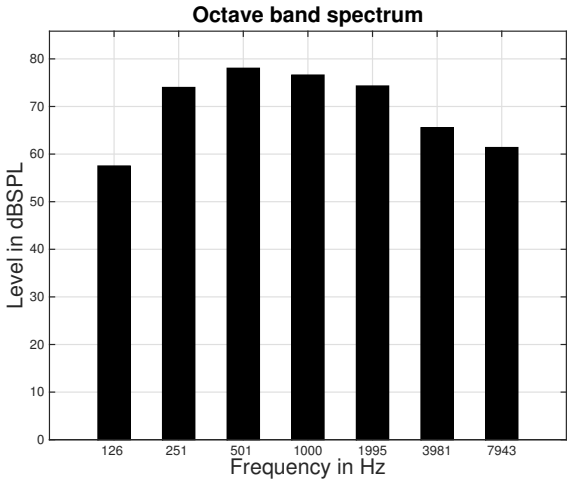

Figure 4: Octave band levels, expressive speech

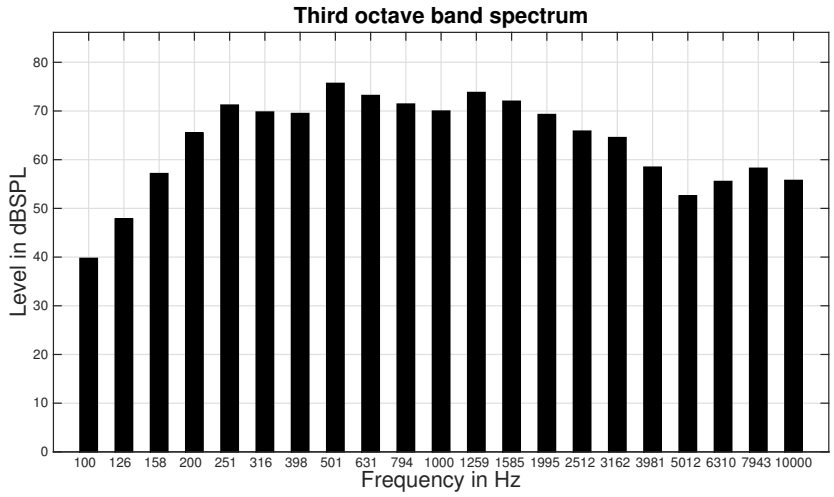

Figure 5: Third octave band levels, expressive speech

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