September 29

VIRTUAL ROOM ANALYSIS

* Mic: PCB piezoelectronics, omnidirectional microphone
* The sweep is been sent by each loudspeaker one after the other
* The sum of the single impulse responses is being computed

GOAL

* Find T20, clarity, definition

SET UPS

Same set of of the morel compensation procedure.

Low pass 40 Hz, switch frequency between woofer and tweeter: 2500 Hz

First measure: the headrest has been removed in order to avoid sound absorptions or reflections, the mic has been placed in the driver position, at the height of the ears, pointing at the ceiling.

TO BE SOLVED

* Microphone calibration: the mic has been calibrated but the post gain not applied yet because of doubts about the procedure to do it for the reason that the IR is obtained throught convolution passages.

NEXT STEMPS:

* Let all the loudspeakers play once all together to get the whole impulse response and compare with the sum of the single ones 
* Measure from different points

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October 19

loudspeakers were set off all at once and the two responses, this last one and the one obtained by summing the measures done on the 29 of September, compared.

Is it possible to observe the same trend on the two IR, in particular a gap around 1600 Hz.

Discussion on the found parameters:

* T20 very low
* Clarity very high
* Definition not interesting because gives the same information given by the clarity
* Same results obtained with audition if the window is set as indicated in the matlab code, 5051 samples
* Use of the standard ISO 3382 to get the parameters
* Use of the Toolbox ITA

TO DO:

* Write details about the decay curve and the Schroeder’s integral and the extraction of the parameters 🡪 state of art7
* Add details on the ITA Toolbox procedure

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ITA TOOLBOX

* Freq. Range: 20-5000
* 1/3 or 1 octave band
* Lunderby algorithm for noise detection
* Send to the function the signal properly cut, cutting the tail, 5001 samples

EDC: calculate the reverse time integrated impulse response: Generate for each octave band the decay curve by a backward integration of the squared impulse response.

Lunderby algorithm in order to minimize the background noise, it gives a integration starting point value from which start the backward integration.

The Schroeder Integral is a curve obtained by backwards integration of the squared impulse response, ideally starting from a point where the response falls into the noise and applying a correction (a starting value for the integral) which assumes the rate at which the Schroeder curve is falling continues for the whole response. It is used a procedure to estimate the best starting point for the integration, based on "Lundeby's Method" (from the paper by A. Lundeby, T. E. Vigran, H. Bietz, and M. Vorländer, “Uncertainties of Measurements in Room Acoustics,” Acustica, vol. 81, pp. 344–355 (1995))

C50 clarity factor for speech= 10log(D50/(1-D50)) dB

D50=(1-edc(0.05, :))\*100 e tende a 100 per alta clarity

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Next steps:

* Do measures mantaining a cental positioned mic and trying to cover/remove the tv, compare the results focusing on the 1600 Hz zone
* Decide if remove the tv
* Set up measurements using more microphone’s positions
* Sub compensation
* Sub positioning through real time measurements or other method to be defined