



CREATIVE LAB AND LECTURE 3 – MATERIALS:

This practical lecture demonstrates the complete setup and measurement process for acoustic analysis in a room. Professor Tronchin meticulously shows students how to mount and connect multiple recording systems: a 64-channel Eigenmike array, an ambisonic microphone (Sennheiser MKH 100), a binaural dummy head, and a standard omnidirectional microphone for ISO-standard measurements. The equipment connects through a Zoom F8 recorder for analog signals and via Dante protocol for the Eigenmike, with all positioning carefully calibrated to avoid shadowing effects and maintain proper directional alignment toward the sound source. The measurement process involves playing an exponential sine sweep (15 seconds from 40Hz to 20kHz) through a loudspeaker, recording the output through all microphones simultaneously, then using deconvolution with an inverse filter to calculate impulse responses that contain complete acoustic information about the room. From these impulse responses, various acoustic parameters can be extracted including reverberation time (T10, T20, T30), clarity (C50, C80), and other metrics defined in ISO 3382 standards, with the demonstrated room showing a short reverberation time of approximately 0.4 seconds and high clarity values suitable for speech.

1. **Dante Virtual Sound** - A plugin for audio networking (costs around €70)
2. **Dante Controller** - Software for managing Dante audio network connections
3. **Audacity** (free) - Audio editing software used to open and analyze the 64-channel waveform files

Reaper - DAW software with plugins for A-format to B-format conversion, MCFX Convolver:

<https://github.com/kronihias/mcfx/releases>

- (Under Assests select the right one for your OS):
- [mcfx_v0.6.3_macos_vst.pkg](#)
- [mcfx_v0.6.3_win64.exe](#)

IEM plugin suite:

<https://plugins.iem.at/download/>

The main software ecosystem discussed and demonstrated revolved around the Dante protocol for recording the 64-channel Eigenmike array, with additional audio editing software used for post-processing and calculating room acoustic parameters.