MSc Thesis proposal – 30 credits (preferably 2 students)

**Vibrations, sound pressure level and hearing thresholds:**

**Do they all show the same thing?**

**BACKGROUND:** Hearing ability is routinely measured by testing a subject’s sensitivity to tones at different frequencies. This is done with an instrument called audiometer, which can send calibrated stimuli via loudspeakers, earphones or a bone vibrator. There are situations when these measurements are not possible to perform, for example in artificial models or non-living subjects. Alternative methods are used in these cases, focusing on the objective measurement of vibrations and sound pressure instead of subjective sensation of hearing.

In the field of *bone conduction hearing*, both subjective and objective measurements are used. However, it is still not clear how they correlate with each other, and whether they provide similar or complementary information.

**AIM OF THE THESIS:** The aim of this thesis project is to determine how well four different measurement techniques agree with each other, and to investigate if there is a way to maximise their correlation.

**METHODS:** The four measurement techniques to be addressed are:

1. Hearing sensitivity to single frequency tones, assessed with an audiometer;
2. Sound pressure, measured in cranial cavity with low noise insert microphones;
3. Velocity of a target surface, on the bone or skin, measured with a laser Doppler vibrometer.

Stimulation will be provided via a bone vibrator. Subjects for the measurements will be the students themselves and other volunteers.

The students will have full access to the group’s hearing lab, equipped with a sound proof room, audiometer, laser Doppler vibrometer, accelerometers, different microphones and other instrumentation.

For more information please contact

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