**HERTZ: Experiencing the Earth’s inaudible symphony**

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**Introduction**

Imagine the inaudible symphony that our planet creates resonating through your body. HERTZ is a project that makes this a reality by allowing the inaudible sounds of our planet and beyond be experienced through sight and touch.

**What is infrasound?**

Infrasound consists of low frequency sound waves that are below the range of human hearing (frequencies less than 20 Hz). Some infrasound is produced by human activities such as mining, explosions and supersonic aircraft. Infrasound is also produced by natural phenomena such as volcanoes, earthquakes, glaciers, ocean swells, thunderstorms and even the aurora borealis. Infrasound propagates effectively through the atmosphere, so it can be observed 100s of km away from the source.

**Observing infrasound waves**

Sound waves are simply minute pressure perturbations that pass through the Earth’s atmosphere. Thus, infrasound can be detected using precision microbarometers. The microbarometer is connected to a network of porous hoses which ensures noise from the wind is removed from the measurement. Figure 1 shows a low-cost microbarometer which will be used in this project, Figure 2 shows a professional installation where a large network of porous hoses spanning 4-5m are connected to the microbarometer which is mounted just under the surface.

**Method: How to experience Infrasound**

1. **Infrasound data.** Atmospheric infrasound is detected by the infrasound detector and logged on to a PC data logger. This is used to vary an audible soundwave which can be experienced.

2. **Modulation.** Different techniques will be investigated. Firstly, the infrasound data is used to amplitude modulate an audible sound wave in the 30-50Hz range. This approach is used so that the pulsing effect of the infrasound wave from can be sensed through loudspeakers specifically a silent sub woofer and a standard sub woofer. Secondly, the pressure amplitude is used to modulate the frequency of the sound wave, to vary the pitch in sympathy with the amplitude of the infrasound wave.

3. **Experience.** The modulated sound waves are to be played through a sub woofer (A) positioned near the participant and through a silent sub woofer (B) attached to the participant’s chair. The sub woofer plays very low frequency soundwaves allowing the modulated infrasound waves to be felt in the air. The silent sub woofer is a transducer which causes an object it is attached to vibrate. Thus the participant can feel the infrasound waves produced by the Earth’s inaudible symphony.

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**Scan the QR code to listen to infrasound and also find more about HERTZ!**