Technische Universität Braunschweig

PTB

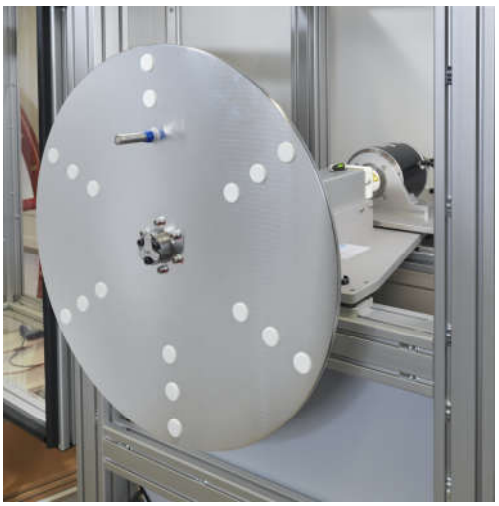
INSTITUT FÜR AKUSTIK

Airflow simulation for infrasonic microphone calibration

Study Project | Master Thesis

In the Mechanics and Acoustics Division at the National Metrology Institute of Germany (PTB Braunschweig), we are dedicated to developing accurate and reliable microphone calibration methods. Microphone calibration in the infrasonic range below 10 Hz presents particular challenges. To address infrasonic microphone calibration, we are working on a novel approach that leverages ambient air's natural pressure gradient. Our method involves spinning an eccentrically mounted microphone on a rotating disk, as depicted in the photo. While this technique proves effective for very low frequencies, calibration becomes increasingly difficult around 5 Hz and above due to wind noise caused by the microphone's movement.

To mitigate this issue, we are designing attachments that can reduce the impact of the wind. However, we do not yet understand the flow profiles accurately; therefore, we seek assistance to simulate the flow around the microphone using CFD or FEM techniques. The insights gained from these simulations will be instrumental in optimizing the microphone's attachment. Subsequently, we will proceed to prototype and test the most promising attachments in our research facilities at PTB. With this project, you will contribute to cutting-edge research as an integral part of the European Project Infra-AUV.



Contact

Stefan Jacob
Langer Kamp 19, Raum 203
Tel: 0531 / 392 – 1228
stefan.jacob@tu-braunschweig.de

www.tu-braunschweig.de/ina