Technische Universität Braunschweig

Physikalisch-Technische Bundesanstalt
Nationales Metrologieinstitut

Institut für Akustik und Dynamik

Computational methods for atmospheric low-frequency noise prediction

Study Project | Master Thesis

Modeling low-frequency sound propagation is crucial for many application domains as the sound waves propagate over long distances in acoustic waveguides that may cause disturbances. One promising way to model low-frequency wave propagation and to study their environmental impact is to perform an acoustic mode spectra analysis of the complex fields. Other complex atmospheric conditions can also be included in this framework to predict noise in such situations. However, due to the impending large computational domain, simulations are highly expensive and render challenging. The main focus of the project is to develop scalable computational solutions for the problem at hand.

The project offers the opportunity for continued exploration and will be conducted in close cooperation with the Infrasound Research Group, Physikalisch-Technische Bundesanstalt.

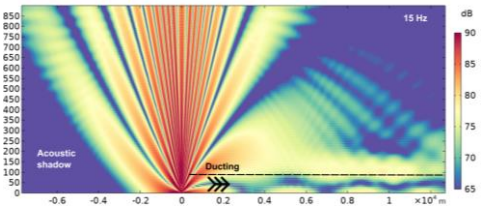
Tasks:

- Fundamental study on existing methods like normal mode approaches
- Contribute scalable solutions to an open-source computational software project based on finite element method (FEM)

Requirements:

- Affinity towards computational sciences
- Basic understanding of FEM and programming in C++ is a plus

Begin: As soon as possible



[Infrasound Research Group, PTB]

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