OeAW - Discovering the future

As a central non-university institution for science and research, the **Austrian Academy of Sciences - OeAW** has the task of "**promoting science in every respect**". Founded in 1847 as a learned society, it now has over 760 members and around 1,800 employees dedicated to innovative basic research, interdisciplinary knowledge exchange and the dissemination of new insights. The OeAW initiates and maintains partnerships worldwide and represents Austria in international scientific organizations; it cooperates with numerous institutions in the scientific field in order to actively **shape the research landscape**.

PREDOC - Numerical Acoustics (F/M/X)

Job ID: ISF087DOC225

The Acoustics Research Institute (ARI), an interdisciplinary research institution of the Austrian Academy of Sciences (OeAW), Austria's leading non-university research facility, is offering a position as

PhD Student (F/M/X)

(part-time/30h per week)

in the Numerics Cluster led by Holger Waubke.

The position is assigned to an FWF-WEAVE project entitled “LION 2: Localization and identification of moving noise sources” led by Dr.-Ing. Holger Waubke, apl. Prof. The project is a continuation of the project LION carried out in collaboration with the Berliner Hochschule für Technik (BHT), the German Aerospace Center (DLR), and the Swiss Federal Laboratories for Material Science and Technology (EMPA).

Your Tasks

The central research topic in this project is to develop methods for the localization of sound sources on moving vehicles, such as trains or airplanes using microphone arrays. The main focus of the project part at the ARI is inverse methods, specifically employing the 2.5-dimensional boundary element method for solving the Helmholtz equation. This approach is based on a Fourier transform along the direction of motion and is highly suitable, e.g., for trains running on long and straight tracks. Also, the boundary element method allows the inclusion of scattering structures such as noise barriers in a straightforward manner. In the predecessor project LION an algorithm was already developed for the localization of moving single-frequency sources, which will be the basis for developing methods for more general scenarios. To achieve this aim, the work in the announced position will focus on the following tasks:

- Extension of the existing approach to general harmonic and stochastic broad-band sources
- Inclusion of time-frequency representations into the algorithm
- Investigation of the effects confounding localization and development of suitable and more robust inversion methods
- Increase of the efficiency for the computation of the 2.5D forward problem

Your Profile

- Master’s degree (or equivalent) in engineering, physics, mathematics or similar.
- Profound knowledge of written and oral English.
- Understanding of the Fourier transform and time-frequency representations.
- Basic understanding of the theory of stochastic processes.

- Basic knowledge of numerical mathematics, including the boundary element methods.
- Programming skills in Matlab, C or C++, possibly Python and Julia.
- The candidate should be able to integrate into a multi-disciplinary research team.

Our Offer

- A position in an innovative and internationally active environment crucial to success
- Numerous voluntary social benefits
- Flex time arrangement
- Opportunity to work independently and develop personally
- The position is limited to 3 years. The starting date is flexible between October and November 2025.
- An annual gross salary according to the collective agreement of the Austrian Academy of Sciences (OeAW) of € 39.208,68.
- Candidates should send a CV, copies of relevant certificates, and a brief statement describing motivation, personal qualifications, and research interests by e-mail.

APPLY NOW

The Austrian Academy of Sciences (OeAW) pursues a non-discriminatory employment policy and values equal opportunities, as well as diversity. Individuals from underrepresented groups are particularly encouraged to apply.

Contact

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