

PhD position (100%) at RWTH Aachen University: Application of virtual acoustics and VR to research acoustic well-being (m/f/d)

The interdisciplinary research training group “Multi-domain and context-dependent spatial approaches to acoustic well-being (MOSAIC)”, funded by the HEAD Genuit Foundation, aims to improve our understanding of “acoustic well-being”. The project investigates how acoustic comfort changes in different indoor and outdoor spaces and during different activities, such as learning, working or relaxing. It also aims to contribute to field of *soundscape* research, which describes other environmental factors and their influence on our auditory perception.

We are looking for dedicated doctoral students for this innovative and interdisciplinary project, which focuses on acoustic comfort in learning and working environments.

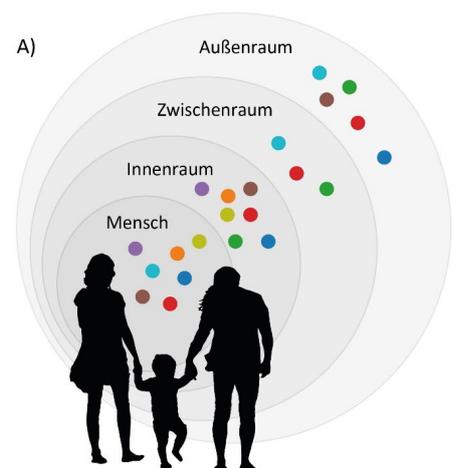
Our goal is to develop a comprehensive approach that integrates all four main components of Indoor Environmental Quality (IEQ) – thermal comfort, acoustics, air quality and lighting.

Our project addresses the following research questions:

1. Which methods for investigating acoustic comfort are most effective?
2. How can realistic auralizations be developed and validated for use in perception experiments?
3. How do psychoacoustic evaluations in real environments differ from those in controlled scenarios?
4. Which interactions between the IEQ components influence acoustic well-being?

We offer the opportunity to participate in the development and validation of new methodologies and to further develop and validate innovative auralization techniques. The interactions between acoustics and other IEQ factors are investigated.

A total of eight chairs are involved in the highly interdisciplinary research training group, seven of which are from five faculties of RWTH Aachen University and the University Hospital Aachen (architecture, civil engineering, electrical engineering, mechanical engineering and medicine) and one of which is from TU Berlin.



At the Institute for Hearing Technology and Acoustics (IHTA) at RWTH Aachen University (Germany), we’re researching the physical and technical aspects of sound as well as the human perception and processing of sound. Our aim is to expand interdisciplinary research in the field of sound perception and processing in complex acoustic environments. In this context, our team of around 20 scientists develops and applies measurement methods and simulation technologies to investigate the physics of complex acoustic scenarios using acoustic virtual reality.

Your profile

- An above-average university degree (Master's or equivalent) in electrical engineering, physics or another relevant field and fulfillment of the admission requirements for a doctoral program
- Good knowledge of fundamentals in acoustics and acoustic signal processing
- Good knowledge in one or more of the following areas: psychoacoustics, virtual acoustics, soundscapes
- Good programming skills in Matlab and/or Python, preferably also in C++
- Excellent communication skills in English (teaching, publications)
- Language proficiency in German or willingness to learn German in the first few years (for organizing listening experiments, communicating with study participants)
- Interest in fundamental research in the field of auralization and perceptual evaluation in an interdisciplinary context
- Willingness to collaborate and take on teaching responsibilities
- Flexibility and ability to work in an interdisciplinary team

Your tasks

- Interdisciplinary research and development with a focus on acoustic virtual reality
- Development of a questionnaire to assess acoustic comfort in a learning environment.
- Planning, design, implementation and evaluation of experiments with acoustic virtual reality in various realistic scenarios with regard to acoustic comfort
- Research and development for the integration of the four main components of Indoor Environmental Quality (IEQ) – thermal comfort, acoustics, air quality and lighting.
- Publication of scientific papers in peer-reviewed journals and at (inter)national scientific conferences.
- Completing organizational and self-administrative tasks, participating in the application process for research projects and active collaboration in the Institute for Hearing Technology and Acoustics as well as organizing and conducting Research Training Group activities (e.g. conferences, talks, workshops)
- Involvement in bachelor's and master's degree courses (practical training, seminars, exercises, projects, exam preparation, supervision and follow-up, (co-)supervision of theses)

Your benefits

- We offer the opportunity to work in a dynamic, interdisciplinary team, as well as extensive technical equipment and training in the latest methods of hearing research and acoustics
- We offer a doctorate in a structured program
 - systematic career development in the graduate center
 - comprehensive training by a dedicated team
- We offer a family-friendly environment with leisure and childcare services
- We offer a wide range of further education and training opportunities.
- You benefit from active participation in the interdisciplinary events, workshops and colloquia of the research training group
- You will collaborate with other doctoral students as well as national and international scientists in the research network
- You will have the ability to work independently and in a team for collaboration in an interdisciplinary research project

You can find out more information and see the full application details here:

<https://www.rwth-aachen.de/go/id/kbag/file/V000009195/lidx/1/>



Job Offer



IHTA Website



MOSAIC Website