

## Kolloquium für Mechanik

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Date: Thursday, March 22, 2018  
Time: 15:45 Uhr  
Location: Geb. 10.81, Emil Mosonyi-Hörsaal (HS 62, R 153)

Title: **Investigation of Turbomachinery Noise Sources Using Phased Array Microphones and Beamforming Technology at the Budapest University of Technology and Economics**

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### Abstract

Phased array microphone measurement and beamforming technology have quickly advanced in the past decade. By providing a nonintrusive means of localizing noise sources, this technology has come to form the backbone of many aeroacoustic measurements. At the Budapest University of Technology and Economics (BME), our research group has focused on applying this technology in turbomachinery investigations, overcoming obstacles associated with the localization of rotating noise sources and making links between aerodynamic and aeroacoustic phenomena. This talk will introduce the Department of Fluid Mechanics of BME and the research being carried out there, focusing on the work of the team dealing with turbomachinery aeroacoustics. Specialized turbomachinery related research topics based on phased array microphone measurement methods and beamforming will be introduced in greater detail, including the investigation of airfoils, the use of clustering in the processing of turbomachinery beamforming data, the diagnosis of turbomachinery axial flow fan beamforming data, the pre-processing of phased array microphone data in the investigation of turbomachinery broadband noise sources, a beamforming method designed specifically for the investigation of rotating coherent noise sources, and a post-processing beamforming method based on POD analysis, which is being developed in a joint venture with KIT, designed for filtering out shaft order noise sources.

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Alle Interessenten sind herzlich eingeladen.

Prof. Dr.-Ing. Bettina Frohnafel