

Aachen Acoustics Colloquium 2025

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Place:

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Title:

Automotive Audio Quality: Communication and Entertainment

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Abstract:

With vehicles undergoing a fundamental transformation over the past few years in terms of shifting towards hybrids and electric vehicles, the focus on in-car acoustics and audio quality is also evolving. Car acoustics are nowadays less dominated by mechanical noise sources (e.g. combustion engines or gearboxes) and the spotlight is turning to the in-cabin audio experience. The two core application scenarios that need to be considered here are communication and entertainment. These changes pose new challenges for the acoustic measurement technology.

This contribution outlines these challenges and presents novel and practical approaches to make meaningful measurements focussing on car audio. We explore dynamic user behaviour, by incorporating head movements and listener variability for real-world listening scenarios, emphasizing on the perceptual audio quality, spatial presentation, and clarity. The complexity of the acoustic environment within a car cabin warrants a hybrid testing approach that blends traditional acoustic measurements with perceptually relevant metrics aligned with subjective perceptions in the cabin.

The work aims to provide guidance for optimizing the in-cabin audio experience in line with the evolving NVH landscape for electric and hybrid vehicles.

Topic: Infotainment and Communication in (autonomous) Vehicles

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