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Title:

Holistic Investigation of Acoustic Zones in the Electric Vehicle

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Abstract:

Successful design of vehicle interior acoustics requires a consideration of acoustic quality of all noise components involved at all passenger positions, as well as communication effort between passengers in the vehicle and telecommunication to exterior receivers. A holistic investigation of all relevant acoustic characteristics of the vehicle is mandatory to achieve this goal. In addition to powertrain, wind and road noise contributions ("NVH behavior"), this also includes analysis of all aspects of "communication effort", e.g. listening effort in the interior, ease of hands-free communication and use of voice control. Especially in electric vehicles, the properties of introduced synthetic sounds ("active sound design") need to be addressed more comprehensively to avoid unwanted side effects on communication effort.

This paper presents current progress in the field of holistic design and analysis of acoustic zones in the interior, discussing an exemplary case study of a high-performance electric vehicle.

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