

Master Project

Design of Experiment for Vibroacoustic Reference Measurements

Motivation

Sound-radiation patterns of vibroacoustic phenomena are highly diverse and strongly dependent on the observed frequency. Hence, sound-pressure measurements at selective sensor locations often hardly represent the behavior of the total sound field. This work investigates methods to determine the optimal microphone positions for acoustic reference measurements to a vibroacoustic finite element simulation. The aim is to determine the locations that are most sensitive to changes in the acoustic field due to variations of the thin-walled structure.

Tasks

- Investigate methods for obtaining a reduced-order model of an existing vibroacoustic setup
- Construct variations of the model
- Find the optimal positions in an inverse approach
- Document the design-of-experiment workflow.

Research Questions

Which approaches work best?

How many sensor locations are required?

Organisation

- **Language:** English preferred, German possible
- **Start:** immediately possible
- **Duration:** 3 Semesters maximum

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