

Bachelor thesis, semester project or master thesis

Design of a novel support system for structural vibration analysis

Topic

In the field of experimental vibration analysis, various methods have been established for investigating structures for their vibration behavior. Especially large plates such as sandwich structures need to be analyzed for model updating. These structures – often lightweight – are difficult to support for experimental investigation since gravity results in a pre-deformation and residual stresses that pollute the model updating.

Therefore, a novel support system is necessary that minimizes the effects of gravity and in parallel provides different excitation mechanisms. Here, the concept of an air hockey table is utilized to serve as a concept for a novel support system. The task is to develop a principle concept, design possible realizations, rate the solution with the highest potential, and build a demonstrator. Financial support is provided to build the necessary structures together with the MakerSpace in Garching.



Source Link

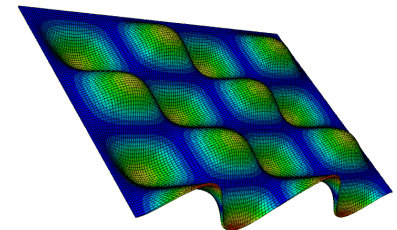


Plate vibration

Tasks

- Literature review on similar systems and analysis on safety regulation (air pressure)
- Develop principle concepts and rate potential solutions
- Built demonstrator and check performance
- Analyze test structure with Laser-Doppler Vibrometer

Requirements

- High interest in the subject of vibro-acoustics and the dynamics of complex structures and systems
- High interest in experimental studies and practical applications

English or German language is possible for this thesis.

TUM Contact Person

Dr.-Ing. Marcus Mäder
Chair of Vibroacoustics of Vehicles and Machines
TUM School of Engineering and Design
Technical University of Munich
Marcus.Maeder@tum.de
Tel.: +49 89 289 55123