

## DAGA 2021

15. 18. August 2021

**Title:** Numerical Preliminary Study Tool for Planning the Experimental Modal Analysis

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### Abstract:

Numerical models for components that consist of homogeneous materials enable a quick statement to be made about the vibration behavior. The numerical models are often able to predict the vibration behavior qualitatively correctly, even if the validation has not yet been completed. Experimental modal analysis is usually used for validation.

In experimental modal analysis, the challenge is to choose the reference points in such a way that many, if not all, mode shapes can be found in the relevant frequency range. Furthermore, the user would like to avoid selecting too many reference points, as they slow the assessment and add complexity.

Within the scope of this work, the potential of the non-validated numerical model is used to minimize the risk of inadequate experimental modal analysis. This is made possible based on numerical modal analysis and an algorithm that automatically finds the best reference points while specifying the geometric area that is available. The success of the method is shown using examples.