Technische Universität Braunschweig

INSTITUT FÜR AKUSTIK

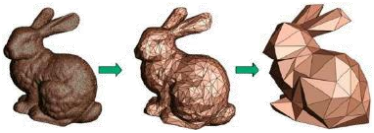
Efficient Krylov-Based Model Order Reduction Techniques for Fluid-Structure Interaction

Master Thesis

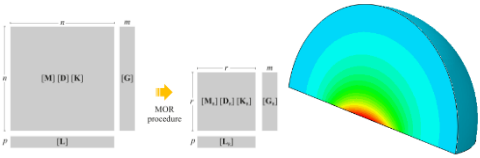
The **Model Order Reduction (MOR)** approach is a method to reduce the large-scale dimension of a system to significantly lower order without compromising on accuracy. In **Finite Element Method (FEM)**, MOR techniques can be applied to reduce the huge dimensions of the system matrices. Thereby yielding faster computations in the reduced space.

For vibroacoustic applications, Krylov-based MOR (KMOR) is one promising method to approach a complex system with higher degrees of freedom and highly localized damping. The method projects the higher order dimensional space of FE system matrices to a suitable lower order Krylov subspace.

A step for further research in KMOR is to investigate their application for problems with fluid-structure interaction.



Source: Schilders, Wil (2008): Introduction to Model Order Reduction.



Tasks:

- Familiarizing KMOR algorithm in MATLAB and implementing in C++
- Investigating efficient strategies for fluid-structure interaction

Begin: Immediately

Contact

Harikrishnan Sreekumar, M.Sc.
Langer Kamp 8, Raum 410
Tel: 0531 / 391 – 8780
hk.sreekumar@tu-braunschweig.de

www.tu-braunschweig.de/ina