Master Thesis

**Redundancy Distribution in Reduced Models**

The concept of redundancy matrices in discrete truss structures is well-described in literature [1, 2]. The redundancy matrix contains information about the distribution of statical indeterminacy, i.e. of internal constraint. This information is valuable especially in the design and analysis of adaptive structures [3, 4]. Further research towards design and analysis of adaptive surface structures is needed when dealing with structures in continuous space [2], especially in statically indeterminate structural theories like e.g. 2d-elasticity.

The aims of this thesis are (1) investigating the redundancy distribution of discrete structures which are reduced by means of statical and geometrical condensation methods, respectively, and (2) redundancy matrices of structures modeled with different structural models (like e.g. beam-like structures modeled with 2d finite elements).

**Specific tasks are**

- Investigating the concept of redundancy matrices in truss structures with application in adaptive structures
- Computing redundancy matrices in reduced models by means of statical and geometrical condensation methods, respectively
- Studying properties of redundancy matrices (e.g. eigenspace, idempotence) w.r.t. different structural models

**Interested in**

Structural mechanics, adaptive structures, Maple/Matlab

**Literature**


