

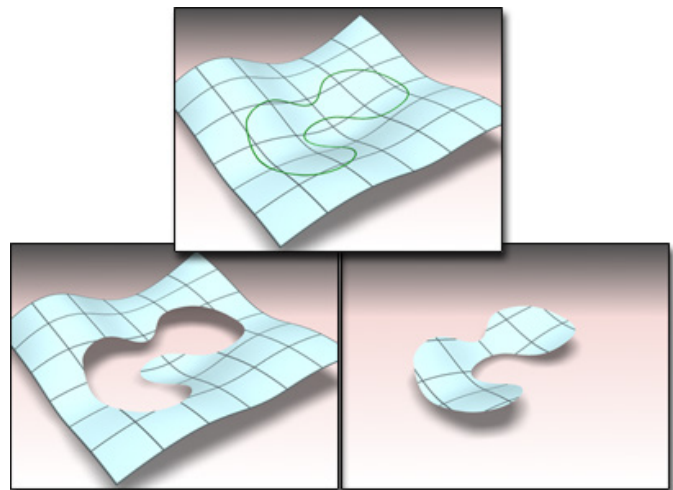
*Master's Thesis*

# ISOGEOMETRIC ANALYSIS WITH TRIMMED NURBS GEOMETRY

**Supervisor:** M.Sc. Hoang Giang Bui

## Background:

Isogeometric analysis is an approximation method exploiting the existing geometrical representation of the CAD model. Since the interpolation functions are used as the same as the functions representing the geometry (NURBS), the method does not require meshing of the geometrical model. Thus gives rise to huge advantage over traditional engineering analysis approach. In addition, the approximation properties of the NURBS shape functions provides better spectral properties, comparing to the standard high-order finite element scheme. This in turn enhances more accuracy for the structural dynamics problems.



In traditional CAD modelling techniques, the complicated geometry features are normally represented by trimmed NURBS. In general, the trimmed NURBS is similar to boolean cutting operation on the geometry. This type of modelling gives more convenience on the productivity of the CAD designer, but is not covered within the original setting of isogeometric analysis.

## Tasks:

- Student understands the trimmed NURBS technology by reading the paper and skimming through the literature. As a supplement task of this phase, student should be able to generate a trimmed NURBS geometry using existing CAD program (e.g. Rhino)
- Implement the trimmed NURBS technique in the existing high performance finite element code (KRATOS)
- Report the results in the final thesis

## Contact:

**Bui, Hoang Giang**

Room: IC 6/163

Lehrstuhl für Statik und Dynamik

Ruhr-Universität Bochum

Tel: 0234-32-29056

Email: [giang.bui@rub.de](mailto:giang.bui@rub.de)