

CAD-BASED MODELING, SIMULATION, AND OPTIMIZATION

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ABSTRACT

The design process in engineering applications is currently experiencing a change in paradigm away from experience-based design to numerical design. An important aspect of this transition process is a holistic CAD-representation. In this spirit, this minisymposium aims at providing a forum for questions concerning modeling, simulation, and optimization approaches, which have been placed in a CAD-context. On the modeling-side, it focuses on geometrical modeling, such as transitioning from manufacturing-oriented CAD-models to analysis-suitable spline representations. Furthermore, in the area of simulation, CAD-based numerical methods, ranging from isogeometric analysis to NURBS-enhanced finite element method, are considered. Finally, this minisymposium addresses CAD-based design methods.

Topics of this minisymposium include, but are not limited to:

- Generation of analysis-suitable spline models and their integration into a CAE-workflow.
- Application-specific CAD-based discretization methods.
- Advances in CAD-based discretization methods such as stabilization methods, efficient assembly approaches, interface capturing methods, etc.
- CAD-based shape and topology optimization in engineering design.
- Design of manufacturing processes, such as tool shapes, path planning, process parameters, etc.