Advances in Computational Mechanics

Einladung zum Vortrag

Topology Optimization and Multiobjective Optimization for Biomechanical and Automotive Applications

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Topology optimization determines the optimum placement of material within the domain of a structure using gradient-based algorithms or update algorithms and the finite element method. The optimization problem involves a very large number of design variables, and the optimum solution is often sensitive to the choice of the initial design domain and finite element mesh. The design space optimization (DSO) method considers the number of design variables as being a design variable and can effectively solve a wide range of topology optimization problems with many design variables.

Multiobjective optimization considers more than one objective function and determines the best trade-off curve among objective functions, which is often called the Pareto frontier. The weighted sum (WS) method is most widely used due to its simplicity and ease of implementation, but it comes with two well known drawbacks: non-even distribution of solutions and inability to find solutions on non-convex regions. The adaptive weighted sum (AWS) method overcomes these difficulties by implementing additional constraints.

This seminar will introduce the fundamental concept of topology optimization and DSO, mathematical formulation and sensitivity analysis, multiobjective optimization and AWS, and their practical applications in biomechanical and automotive engineering.

Donnerstag, 14. Oktober 2010
11:00 Uhr   **MW 0250**

Für weitere Informationen: http://www.lnm.mw.tum.de/events
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