

Einladung zum Vortrag

## Flow Simulation and Shape Optimization in Biomedical and Production Engineering

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Next to the development of robust and accurate discretization methods, modeling and optimal design are playing an increasing role in flow simulation. New models with a tailored level of complexity are necessary as the computational analyses tackle new, often multi-scale, applications. And as these analyses are integrated more closely in the engineering product development process, they are used to quickly pinpoint optimal configurations. Although the example applications are chosen from the fields of biomedical and production engineering, they illustrate the common aspects of the inclusion of automatic shape optimization into an engineering process, such as the need for suitable discipline-specific objective functions, the requirement for efficient mathematical methods that can drive the problem towards an optimum objective function value with minimum need for intervention, and the challenges of parametrizing the general shapes in a way that is both flexible, in order to allow non-intuitive shape modifications, and efficient, without resulting in intractable number of parameters or ill-posed shape identification problems.

**Freitag, 18.07.2014  
MW 1250**

**9:00 Uhr  
Maschinenwesen, Boltzmannstr. 15, 85748 Garching**

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