



Main Focus

- Flexible Structures
- Fluid Dynamic Process Design
- Lattice-Free Methods
- Energy Grids and Model Reduction

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Transport Processes

What does your department deal with and what constitutes its research work?

We model complex industrial problems and develop efficient algorithms for the numerical simulation and optimization of these problems. The problems are mostly in the context of fluid dynamics, structural mechanics, radiative transfer, optics etc. From the point of view of our industrial customers, it is about the design of production processes and the optimization of products.

What potential does your department’s research have for a better future?

Techniques for automatic differentiation allow the identification of systems and their optimization with previously unimaginable quality and efficiency – it was this background that made it possible to develop epidemiological models for an extremely dynamic infection event with the start of the Corona pandemic. For industry, we have created MESHFREE, a software that describes processes and products with complex and highly variable flow dynamics very well. Current urgent problems such as energy grids and energy efficiency have played a have also played a relevant role in our research for years.

Where do you see your department in five years?

We will increasingly develop, use and license our own software tools. The associated growth requires adapted structures, which will be implemented in the course of the upcoming change in department management.

Which three keywords best describes your department?

- Flexible methods – problem-oriented – customer-oriented

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- Don’t Lose the Plastic Thread Thanks to Simulation S. 68

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