

# Semesterarbeit/Term Project

(Rechnergestützte Wissenschaften / Computational Science)

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## Finite Element Methods for Problems with stochastic data

### Background.

The Finite Element Method (FEM) is a standard tool in computational mechanics and used worldwide in industry.

Recently, problems where the input data are not given deterministically, but are random, have moved in the focus of interest.

### Issues.

This Semesterproject will investigate and implement a new Finite Element Method of high order for the fast and deterministic (i.e. Non-Monte Carlo) computation of solutions to stochastic Beam-Bending problems, using hp-Finite Element Methods and the sparse tensor products of these spaces.

### Prerequisites.

Programming Skills: MATLAB or C,

RW courses: Numerical solution of Differential equations (5th Semester)

**Time.** 3 Months.

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