

23. Oktober 2015

Im Oberseminar

Numerik

wird am

Mittwoch, dem 4. November 2015

folgender Vortrag gehalten:

Herr Dr. Jan Heiland

Max-Planck-Institut Magdeburg

Time-dependent Dirichlet conditions in finite element discretizations

Zeit: 10:15 Uhr

Raum: M1101

Interessenten sind herzlich willkommen!

Abstract: For the modeling and numerical approximation of problems with time-dependent Dirichlet boundary conditions, one can call on several consistent and inconsistent approaches. We show that spatially discretized boundary control problems can be brought into a standard state space form accessible for standard optimization and model reduction techniques.

We discuss several methods that base on standard finite element discretizations, propose a newly developed problem formulation, and investigate their performance in numerical examples. We illustrate that penalty schemes require a wise choice of the penalization parameters in particular for iterative solves of the algebraic equations.

Incidentally, we confirm that standard finite element discretizations of higher order may not achieve the optimal order of convergence in the treatment of boundary forcing problems and that convergence estimates by the common method of *manufactured solutions* can be misleading.

gez. Prof. Stefan Volkwein