

27th IFIP TC7 Conference 2015 on System Modelling and Optimization

Numerical Analysis for PDE-Constrained Optimal Control Problems

## **Aposteriori Error Analysis for State Constrained Optimal Control Problems**

**Kunibert G. Siebert**

Institute for Applied Analysis and Numerical Simulation, University of Stuttgart, Germany

kg.siebert@ians.uni-stuttgart.de

**Abstract:** Aposteriori error estimators are one of the core modules of adaptive finite element software. In the context of optimal control problems the a posteriori error analysis is well-established for control-constrained, linear-quadratic optimal control problems. In contrast to this, state constraints give rise to serious problems in the rigorous error analysis. In this talk we report on our recent findings for state-constrained optimal control problems. We present an error estimator giving a reliable upper bound for the true error without any assumption on the true and discrete active sets. We discuss its performance in numerical experiments.

This is joint work with Arnd Rösch (Duisburg-Essen) and Simeon Steinig (TU Dortmund).