Thomas Wihler*

*Mathematisches Institut, Universität Bern, Switzerland

An *hp*-Newton-Discontinuous-Galerkin Finite Element Approach for Semilinear Elliptic Boundary Value Problems

In this talk we consider the numerical solution of general second-order semilinear elliptic boundary value problems, with possible singular perturbation, by an hp-version Newton-Discontinuous Galerkin (NDG) procedure. Our approach combines both adaptive Newton schemes and an hp-DG finite element discretisation, which, in turn, is based on a robust hp a posteriori residual analysis. Numerical experiments investigate the performance of the proposed approach for various examples.