Minisymposium 2 - Numerics for PDE-Constrained Control Problems

Semismooth Newton methods for Lavrentiev regularized nonlinear optimal control problems

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A class of nonlinear elliptic optimal control problems with a Lavrentiev-type regularization of pointwise state constraints is considered. The main interest in this talk is to present our latest theoretical results consisting of the convergence analysis as well as the mesh-independence principle of the associated semismooth Newton algorithm applied to the problem. Numerical tests including a study of the algorithm in the case of vanishing Lavrentiev-parameter are presented. The latter process is realized numerically by a combination of a nested iteration concept and an extrapolation technique.