Multiobjective Optimal Control of a Non-Smooth Semi-Linear Elliptic PDE

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Scalar optimization problems with non-smooth PDEs have been researched considerably over the last years. When optimal compromises (i.e. Pareto optimal points) for optimization problems with multiple objectives and non-smooth PDE constraints are sought after, only few results are known. This talk addresses the multiobjective optimal control of a non-smooth semi-linear elliptic PDE with max-type nonlinearity. The presentation covers existence of Pareto optimal points, C- and strong stationarity conditions in the multiobjective setting as well as corresponding numerical results for examples with up to 3 cost functionals.

This is joint work with Constantin Christof (TU Munich).