

## **Two Infeasible Interior Point Methods for Optimal Control Problems with State Constraints**

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We present two infeasible interior point methods for pointwise state constrained optimal control problems with elliptic PDEs. A smoothed constraint violation functional is used to develop a self-concordant barrier approach in an infinite-dimensional setting.

For the resulting algorithms we provide a detailed convergence analysis in function space. This includes a rate of convergence and a measure for the proximity of the actual iterate to both the path of minimizers and the solution of the problem.

Moreover, we report on numerical experiments to illustrate the efficiency and the mesh independence of this approach.

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