

# An Interior Point Method for an Elliptic Control Problem with Pointwise State Constraints

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**Abstract:** A linear-quadratic distributed elliptic control problem is considered, where pointwise box constraints are imposed on the state. To set up a primal-dual interior point method in function space, the constraints are approximated by a Lavrentiev type regularization. It is shown that the associated central path exists. Based on this result, a short step path following method is discussed and numerical results are presented.

## References:

- [1] C. Meyer, U. Prüfert and F. Tröltzsch, On two numerical methods for state-constrained elliptic control problems, Technical report, Institut für Mathematik, TU Berlin, 2005, Report 5-2005.
- [2] U. Prüfert, F. Tröltzsch and M. Weiser, The convergence of an interior point method for an elliptic control problem with mixed control-state constraints, submitted. Technical report, Institut für Mathematik, TU Berlin, 2004, Report 36-2004.

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