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State-constrained optimal control of an elliptic equation with its right-hand side used as control function

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Abstract

A grid approximation is considered for the control-and-state-constrained optimal control of a linear elliptic equation with its right-hand side used as a control function. The resulting finite-dimensional problem is solved by using iterative methods, whose convergence is analyzed theoretically and numerically. Numerical results produced by different methods are compared.

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Keywords

constrained saddle point problem, finite element method, iterative methods, optimal control