Finite element approximation and iterative method solution of elliptic control problem with constraints to gradient of state

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Abstract

© 2015, Pleiades Publishing, Ltd. An optimal control problem with distributed control in the right-hand side of Poisson equation is considered. Pointwise constraints on the gradient of state and control are imposed in this problem. The convergence of finite element approximation for this problem is proved. Discrete saddle point problem is constructed and preconditioned Uzawa-type iterative algorithm for its solution is investigated.

Keywords

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