

A PRIORI AND A POSTERIORI ERROR ESTIMATES FOR OPTIMAL CONTROL PROBLEMS WITH FINITE ELEMENTS.

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We consider finite element solutions to optimization problems, where the state depends on the possibly constrained control through a linear partial differential equation. Basing upon a reduced and rescaled optimality system, we derive a priori and a posteriori bounds capturing the approximation of the state, the adjoint state, the control and the observation. The upper and lower bounds show a gap, which grows with decreasing cost or Tikhonov regularization parameter. This growth is mitigated compared to previous results and can be countered by refinement if control and observation involve compact operators. Numerical results illustrate these properties for various model problems with distributed and boundary control.

Trabajo en conjunto con Christian Kreuzer (TU Dortmund, Germany), Andreas Veeseer (Universita degli Studi di Milano, Italy) y Winnifried Wollner (University of Hamburg, Germany).

Referencias

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