Finite Element Approximation For Optimal Shape Design Theory And Applications

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Finite Element Approximation for Optimal Shape, Material and Topology Design [Haslinger, J., Neittaanmäki, Pekka] on Amazon.com. *FREE* shipping on qualifying offers. Finite Element Approximation for Optimal Shape, Material and Topology Design

Finite Element Approximation for Optimal Shape, Material ...
Finite element approximation of optimal control problems has long been an important topic in engineering design work and has been exten- sively studied in the literature. There have been extensive theoretical and numeri- cal studies for ?nite element approximation of various optimal control problems; see [2,12,13,15,20,23,37,44]. ADAPTIVE FINITE ELEMENT APPROXIMATION FOR DISTRIBUTED ...

Finite Element Approximation For Optimal Shape Design ...
The semi-discrete finite element approximation of optimal control problem , , , , , can be characterized as (4.3) min q h ? U a d J (u h, q h) subject to (4.4) {(0 ? t ? u h, ? h) + (? u h, ? ? h) = (f + q h, ? h), ? ? h ? V h, u h (0) = 0. Here the variational discretization concept was used in the approximation of control variable.

Finite element approximation of optimal control problems ...
Full Text (HTML) In this paper we investigate the finite element approximation of time fractional optimal control problem with integral state constraint. A space-time finite element scheme for the control problem is developed with piecewise constant time discretization and piecewise linear spatial discretization for the state equation.

Finite element approximation of time fractional optimal ...
Approximation methods for the optimal control of distributed parameter systems have been widely studied. In particular, the approach taken in References 1-12 involves approximating the original distributed parameter system by a sequence of finite-dimensional systems and then

FINITE-DIMENSIONAL APPROXIMATION FOR OPTIMAL FIXED-ORDER ...
In this paper we investigate finite element approximation of optimal control problem governed by space fractional diffusion equation with control constraints. The control variable is approximated...

Finite Element Approximation of Optimal Control Problem ...
In this paper we investigate finite element approximation of optimal control problem governed by space fractional diffusion equation with control constraints. The control variable is approximated by piecewise constant.

Finite Element Approximation of Optimal Control Problem ...
More precisely, we achieve convergence order Oh2t?1+??2+h21+ln(t?h2)or O(h?), where ?is a regularity parameter defined in Assumption 2.1. Furthermore, under optimal regularity of the nonlinear function For under a linear growth assumption on F, we achieve optimal convergence order O(h2t?1+??2).

Optimal error estimate of the finite element approximation ...
Finite element approximation of optimal control problems has long been an important topic in engineering design work and has been exten- sively studied in the literature. There have been extensive theoretical and numeri- cal studies for ?nite element approximation of various optimal control problems; see [2,12,13,15,20,23,37,44].

ADAPTIVE FINITE ELEMENT APPROXIMATION FOR DISTRIBUTED ...
yield an approximation rate devoid of the logarithmic factor). The remedy here is to consider instead a "derivative" Green's function, satisfying-Ag = ^- mQ (for each /' = 1,2). Now g is more singular, and piecewise linears afford optimal approximation, albeit at a slower rate. We now turn to the details. Let u E Wp, 2 <p *£ oo, be given.

Some Optimal Error Estimates for Piecewise Linear Finite ...
numerical approximation by using a finite element method in space and a Backward-Euler scheme in time of a family of degenerate parabolic problems. We deduce sufficient conditions to ensure that the fully-discrete problem has a unique solution and to prove quasi-optimal error estimatesfor the

Fully-discrete finite element approximation for a family ...
The extended finite element method (XFEM) is a numerical technique based on the generalized finite element method (GFEM) and the partition of unity method (PUM). It extends the classical finite element method by enriching the solution space for solutions to differential equations with discontinuous functions.

Finite element method - Wikipedia
Finite element method for constrained optimal control problems governed by nonlinear elliptic PDES. ... This means that the ?nite element approximation is alw ays convergent to the exact.

(PDF) Finite element method for constrained optimal ...
In this paper, we study the adaptive finite element approximation for a constrained optimal control problem with both pointwise and integral control constraints. We first obtain the explicit solutions for the variational inequalities both in the continuous and discrete cases.

Adaptive Finite Element Approximation for an Elliptic ...
(2014) Adaptive Finite Element Approximation for an Elliptic Optimal Control Problem with Both Pointwise and Integral Control Constraints. Journal of Scientific Computing 60 :1, 160-183. (2014) Estimating the ice thickness of shallow glaciers from surface topography and mass-balance data with a shape optimization algorithm.

Adaptive Finite Element Methods for Optimal Control of ...
Optimal shape design of structural elements based on boundary variations results in final designs that are topologically equivalent to the initial choice of design, and general, stable computational schemes for this approach often require some kind of remeshing of the finite element approximation of

GENERATING OPTIMAL TOPOLOGIES IN STRUCTURAL DESIGN USING A ...
A unified theory for continuous-in-time evolving finite element space approximations to partial differential equations in evolving domains A strong order 3/4 method for SDEs with discontinuous drift coefficient

Optimal error estimates of Galerkin finite element methods ...
This paper is devoted to a general theory of approximation of functions in finite-element spaces. In particular, the case is considered where the functions to be interpolated are on the one hand not very smooth, and on the other are defined on curved domains. Thus, a number of well-known optimal interpolation results are generalized.

Optimal Finite-Element Interpolation on Curved Domains ...
The unknown function uh which approximates the solution of the PDE is a linear combination of piecewise polynomials and the individual integrals for any given value of uh can be evaluated accurately enough (in general, approximately, using quadrature formulas). Typically, in a finite element discretization procedure, we use refinement.